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WASHINGTON MEDICAL ANNALS

PRESIDENTIAL ADDRESS.*

By W. P. Carr, M. D.,

Washington, D. C.

Fellow Members of the Medical Society of the District of Columbia:

Before turning over the chair to my successor I wish to thank you again for the high honor conferred on me in making me your President and for the assistance you have given me, individually and collectively, in facilitating the executive work of this body. We have a society in which we may well take pride, on account of its numerical size, the average attendance, and the scientific merit of its papers and discussions. Distinguished visitors from other cities have frequently complimented us upon all these points and upon the lively interest taken in their papers and the intelligent discussion of them.

I have no criticism to make, unless it be of the tendency of many members to come in late and an eagerness to depart early. The very life of an organization of this kind depends upon full attendance, and even more upon *prompt* attendance. It is annoying and disturbing to no slight degree to have many members coming in or going out during the reading of some important business report or scientific paper, and to have to explain to late arrivals important matters enacted before they came in. These things of course cannot be entirely obviated, but I wish I could prevail upon every member to set aside our Wednesday nights for eight months of the year to be devoted exclusively to this Society. Let every one come and come early, and what a livening and interest it would create!

I think it is the duty of every member to put this Society above everything except matters of life and death, and every one would be well repaid for so doing. I have never regretted attending a single meeting, but have always felt repaid by awakened interest in my work and knowledge gained, as well as by the pleasure of association with my fellow members Even when the papers have

*Delivered to the Medical Society December 17, 1913.

necessary when the patient is unconscious from traumatic cerebral hemorrhage, and such cases are operated upon every day without a thought of impropriety. But consent of a patient may often be obtained and still the operation done without his knowledge, even until the wound has healed.

Let us suppose, for instance, a patient with exophthalmic goitre, or chronic appendicitis, needing operation, where a few days' delay will do no harm and probably be beneficial. We take him to a hospital for treatment. We get his consent to operate, if it becomes necessary, but advise medical treatment first with hope that he may be cured without operation. The medical treatment consists of applying an aseptic dressing and bandage over the affected part, diet, rest in bed, purgatives or other medicine when needed, a hypodermatic injection of water every morning, followed an hour later by the inhalation of nitrous oxide for a few minutes, just enough to get the patient slightly under its influence. After a few days of such treatment he is given an injection of Morphine with Atropin, or Scopolamin, instead of the sterile water, and Nitrous Oxide, this time, an hour later, is carried to the point of complete unconsciousness. He can then be carried to the operating room, his appendix removed, or his thyroid, as the case may be, and returned to his room and bed, still under the influence of gas. He wakes in a few minutes to full consciousness and, if nerve blocking has been well done, he feels no shock or pain, finds himself in the same surroundings where he went to sleep a short time before, with apparently the same bandage upon him. It would be rather a difficult task to make him believe that he had not simply taken a short nap, but that he had been carried to the operating room and an operation performed.

If quinine and urea hydrochloride be used in addition to novocaine, during the operation, he may not feel even that slight soreness about the wound that is usually felt for a few days upon coughing or moving. It is not necessary, however, in the majority of cases to carry the anoci idea to this extreme degree. It is a supreme test that an operation can be done without pain, or even discomfort, but as a rule excellent results may be obtained without trying to conceal anything from the patient.

For the last two years, except in difficult abdominal cases, I have used nitrous oxide and nerve blocking in all my operations where the patient was able to pay the extra cost, and the patients, as well as myself, have been more than pleased with the result. Now I find that I can do extensive abdominal work with equally good results. In order to understand and appreciate anoci operating one must understand thoroughly certain facts in relation to shock which we will briefly review. These facts I know are not generally appreciated as they should be, even by our anaes-

thetists and assistants, who have been helping in numerous anoci operations.

Shock, as we understand it today, is essentially an excessive loss of the granular protoplasm of central nerve cells. An actual loss of the substance which constitutes the stored up energy of the nerve cells, just as lead salts constitute the stored energy of certain electric storage batteries. Part of this substance, which we call chromatin, because it stains readily with methylene blue, and some other stains, is normally oxidized and burned up with every discharge of nervous energy from the cell.

It has long been known that a nerve cell well stored with chromatin granules will respond quickly and vigorously to slight stimuli, whereas a cell containing few chromatin granules responds more slowly and sluggishly, requires stronger stimuli to cause a discharge or nerve impulse, and will fail to respond at all to any stimulus when the granules are exhausted.

This was all thoroughly worked out at least twelve or fifteen years ago, principally for the spinal ganglion cells of bees, birds, and frogs. I refer you to any standard physiology, preferably Kirke's, for the details.

The chromatin is exhausted by normal use of the cell and restored during rest. Spinal ganglion cells of the English sparrow killed in the morning after a night's rest are plump and well filled with chromatin. In a sparrow killed late in the day the cells contain much less chromatin and the nucleus is shrunken and irregular in outline.

In old insects, birds, and other animals the cells do not recuperate so well during rest, and this would seem to account for the habitual sluggishness of old age in comparison to the energy and quickness of youth.

The nerve cell, like the storage battery and the muscle cell, may be exhausted quickly or slowly. One may "put up" a light dumbbell many times before exhausting his muscular power, but a very heavy one can be lifted but few times before the greatest effort of the will fails to get another effective response from the exhausted muscles.

Under powerful stimuli the brain cells may discharge their granular matter so rapidly as to become pale, shrunken, and incapable of producing further impulses in a very short time, certainly in twenty or thirty minutes.

Death may be caused by very rapid exhaustion of the cells without as much change in their appearance as we may find in the cells of other animals still living where the discharge has been more gradual. This is comparable to the fact that a small loss of blood, if very sudden, may cause death, while a much greater loss, slowly produced, may be well borne.

I show you some microphotographs of the brain of a rabbit, removed in the laboratory of the Emergency Hospital last No-

vember, after being under ether for five minutes, and another photograph from the brain of the same rabbit after being shocked to death under ether thirty minutes later.

The sections were made by Mr. Moreno, assistant in the laboratory, and were prepared by him, stained and photographed in precisely the same manner.

The first (1) section shows normal brain cells, most of them filled with chromatin granules to such an extent as to obscure the nucleus and nucleolus. The second section (2) shows the same rabbit's brain after being subjected to severe shock for thirty minutes. The cells are nearly all practically devoid of chromatin granules. The cell wall shows like a faint ring and the nucleolus appears as a distinct dot in the ring, but the body of the cell and nucleus are not stained and appear as a clear space around the nucleolus.

With the exception of automatic centers receiving direct stimulation from chemical alterations in the blood, nerve cells discharge their impulses only in response to stimuli coming to them from the periphery.

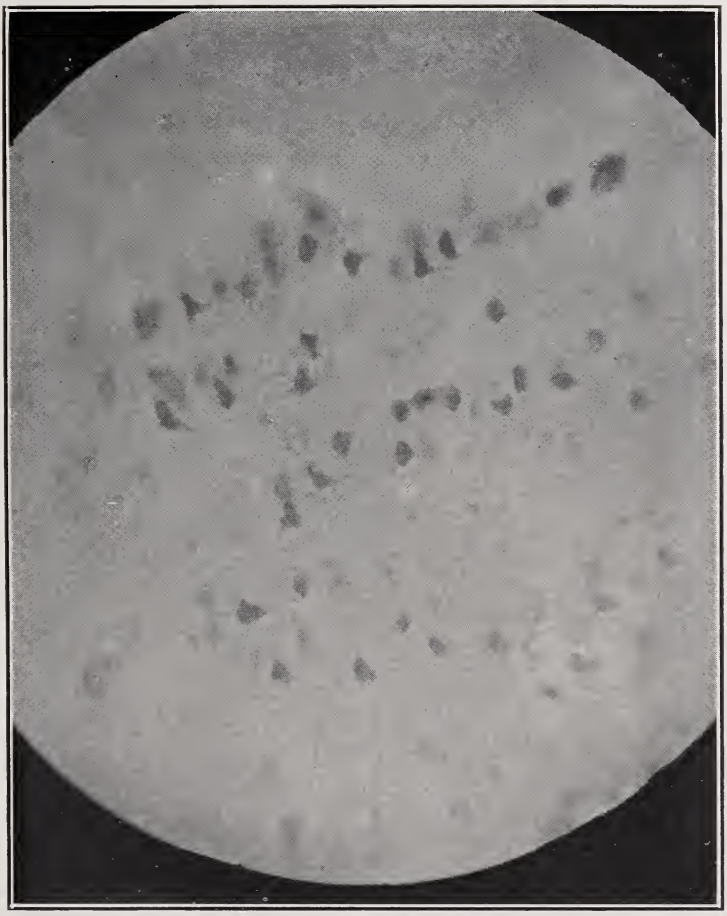
Even the voluntary efforts of the will are responses to afferent impulses coming from special sense organs or peripheral nerve endings, either direct or relayed, through memory cells. No matter whether these impulses come from the skin and special sense organs, stimulated by conditions of environment, or from sensations originating in the viscera, or workings of internal organs, they are peripheral or afferent impulses, and without them there is no discharge of efferent impulse from the central nervous system except from the heart and respiratory centers controlled by chemical alterations of the blood.

If we could shut off from the brain of a man all sensation from the periphery he would probably lapse into profound dreamless sleep and remain in that condition until he died of thirst and starvation. And there would be no sensation of hunger, or sensation from any of his organs, to stimulate his will, or memory, or reflexes. In other words, the brain, cut off from all peripheral impulses, is as inert as a disconnected storage battery.

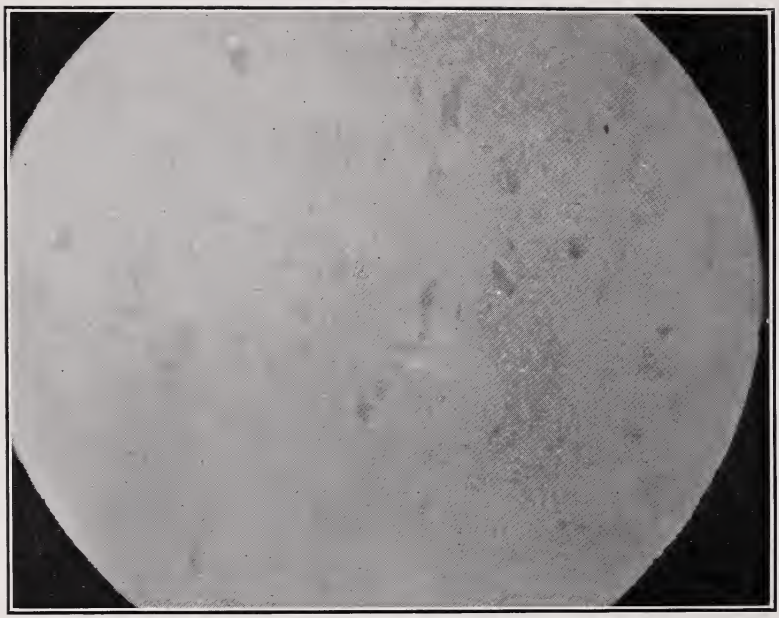
But all afferent impulses reaching the brain cause a discharge of nervous energy and a corresponding oxidation of chromatin in exact proportion to the strength of the impulse.

The most powerful discharges are caused by *noci* impulses. And by this, we mean impulses conveying a sense of evil or danger to the organism. In other words, noci impulses cause fear, automatically, and beyond the inhibition of reason or will.

It may be fear of injury, of death, or of failure, and the efferent impulse may be one of defense, or flight. The muscular response may be inhibited by will, but not the discharge of responding impulse from the brain cells.



No. I.—Normal Rabbit's Brain Cells well filled with Chromatin.



No. II.—Brain of same Rabbit 30 minutes later, after severe shock under ether. Most of the cells pale, showing cell wall like a ring (·) with nucleolus (a dot) in the center. Chromatin almost exhausted from most of the cells.

The more powerful the stimulus from the environment the more powerful will be the brain cell discharge.

The strongest inherent and inherited instinct of every highly organized animal is that of self-preservation. Its only rival in strength is that of procreation.

Even the man about to commit suicide will, if attacked suddenly by a wild beast or a burglar, fight or flee for his life to the very best of his ability. The inherited instinct of self-preservation from wild animals is, perhaps, stronger than any other, and any sensation that reminds one even indirectly of being torn and cut by the teeth and claws of a beast will cause powerful discharges of chromatin from the brain cells in the effort to fight or escape from such a sensation of evil to the organism. It is not even necessary for the patient to understand why he feels this dread.

If you doubt it, let me bind you immovably to a post and tickle your ribs with a pointed stick resembling a canine tooth. Let me press it repeatedly against the skin of your ribs and abdomen, not hard enough to produce physical pain, but just hard enough to make you think of a bear's tooth about to bite you. You know I am not going to injure you physically, nor cause pain in the ordinary sense. Yet there is a sense of evil you cannot overcome by any effort of the will or reason. You squirm and cannot help it.

Let me tell you I am going to keep up the tickling and prodding for a couple of hours. How long could you stand it without squirming and straining at your bonds and begging for mercy! I'd have you in a few minutes so that I could stand across the room, point the stick at you and make you yell.

There are numerous cases on authentic record where such pranks, intended for fun, have resulted in serious illnesses from shock in much less time than two hours.

I doubt if any ordinary man could stand two hours of such tickling.

There is a very close analogy between a nerve cell and a storage battery cell. Each is capable of storing up in itself a substance that can be converted into energy and heat. In the ordinary storage battery this substance is a lead salt, in the brain cell we call it, for want of a better name, chromatin. In each case it is held in a frame work within the cell, inert until the proper stimulus is applied.

When the circuit of a storage battery is complete a chemical change takes place in the lead salt that results in a discharge of electricity through the circuit. When there is great resistance in the circuit the discharge is slow, but when there is little resistance a rapid, powerful discharge takes place which soon uses up the stored material and damages the cell beyond repair unless stopped in time.

The nerve cell under proper stimuli discharges its chromatin with the production of nerve impulses so closely resembling electricity that we cannot be sure they are not electricity. These discharges are weak or powerful in proportion to the strength of the stimulus.

The usual stimulus to a nerve cell is an impulse coming to it through an afferent nerve. It may come direct, or be relayed through associations of memory or volition.

But the nerve cell may also be stimulated to discharge by direct stimulation of the cell itself, and this direct stimulation may be mechanical, chemical, thermic, or electric. The touch of a needle point, the contact of a mild electric current, or any change in the normal chemical nature of the blood or fluids in contact with the cell, may cause a discharge of nerve impulse, and the necessary corresponding oxidation of chromatin or chromatolysis.

Changes therefore similar to those of shock necessarily occur in the brain in fevers, in infections, in certain drug poisonings, and auto-infections from the alimentary canal.

It would make this paper too long to consider these causes now; we must limit the discussion to emotional and traumatic shock in which the excessive discharge from the brain cells is caused entirely by afferent noci impulses coming to the brain through afferent nerves from outside the patient—from his environment.

It is desirable, of course, to shut off *all* noci impulses and associations from the brain of a patient upon whom a critical operation is to be done and also *all* abnormal discharge of chromatin due to chemical or thermic alterations of his blood and other somatic fluids. In the perfected anoci operation of the future this may be accomplished when time allows.

I shall have to confine the consideration to emotional and traumatic chromatolysis, and these are the chief factors that are of more direct importance to the operation itself.

The great and important fact is that we now can operate upon a patient with an already badly chromatolysed brain without increasing his shock in any perceptible degree.

The plain practical point is that we can, today, operate upon extreme cases of exophthalmic goitre with safety and with no increase of pulse rate or thyroid crisis following—cases that we would not have dared touch a year or two ago. And this is not possible with either general or local anaesthesia alone. It is only possible with a combination of *both* and a careful exclusion of noci associations of a psychical as well as of a physical origin.

In the *American Medical Journal* for December 6, 1913, Crile says:

"In rabbits subjected to the emotional stimulus of fear alone, the brain cells showed precisely the same changes as those which resulted from physical injury, namely, an immediate stage of hyperchromatism and a later stage of chromatolysis; a disturb-

ance of nucleoprotoplasmic relation and a final disintegration of many cells." * * *

"As a result of strong fear repeated daily for two weeks as many as eighteen per cent. of the Purkinje cells were destroyed, and many animals died."

Could any evidence be stronger as to the potency of fear as a cause of shock? It would hardly seem so. And yet there is other and independent evidence stronger, at least as regards the human animal, and showing even more conclusively the rapidity with which fatal shock may be produced.

On page 59 of Flint's Physiology (1886 edition), Flint makes the statement that sudden and violent emotions occasionally arrest the action of the heart and have been known to produce death. And on page 62 (*loc. cit.*) he says there are instances on record of immediate death from fright, anger, grief, or other severe mental emotions, and that syncope from these causes is by no means uncommon.

We are all familiar with the classic experiment of pretending to bleed a criminal to death and actually causing his death from purely emotional shock in the brief space of thirty minutes, and with well authenticated cases of death from the same cause following mock executions.

Most of us know from personal experience how sudden strong emotion in the midst of a meal may cause disgust for food, failure to digest that already ingested, and the weak, helpless condition of shock following the sudden discharge of powerful nerve impulses.

I have personally seen two cases of illness produced by tickling. One young man after being tickled for a half an hour by his companions in fun, became unconscious for nearly an hour, and was dangerously ill for several days. Medical literature teems with similar examples, but it is a waste of time to cite more of them. There can be no question that noci impulses originating in sensations of dread and fear are *real* and *potent* causes of dangerous shock; and that persons so shocked are often slow in regaining their normal condition, if they ever do.

Indeed I think it may be pretty clearly shown that fear is the chief cause of physical as well as mental shock; that it is not so much the pain as the fear of its continuation or repetition that causes the violent impulses to escape.

To the man who is being operated upon without anaesthesia the noci associations of injury being done to him, and the fear of more injury are worse than the physical pain. Certainly this is true of operations done with only local anaesthesia.

How often have we seen the pale, clammy skin, anxious expression, beads of sweat on the brow, of some patient undergoing a painless operation under local anaesthesia, and heard the anxious quaver in his voice as he assured us that it did not hurt —— yet!

Only a few days ago I incised an infected finger for a big, strong man in my office under novocain anaesthesia. He suddenly collapsed and fell on the floor, saying everything had turned black. He could not understand, because he said he had no pain, but—— he admitted his fright.

Such things have occurred not infrequently in my office in the last few years,—and sometimes it is the friend of the patient who faints, who certainly cannot suffer physical pain from the operation done on another person.

Some animals—those in some way fully protected from attack—are not susceptible to shock, while those depending upon fleetness of foot for their safety are extremely susceptible.

The same differences are found in human beings. Some men are practically incapable of fear, while others are excessively susceptible.

And yet there is no question of bravery involved. The man in whom keen appreciation of danger and whose inherent fear of pain and love of life are strongest may be the bravest hero on the battlefield of actual war or on the battlefield of life. The truly brave man, and the one we most admire, is he, who knowing danger and feeling fear, still performs his duty with the outward appearance of stoicism, but with a tremendous output of will power.

We may envy the man who does not know fear, but we must admire the one who feels and yet controls it.

But we must remember that neither the effort of an indomitable will nor general anaesthesia can prevent the disastrous expenditure of chromatin when noci impulses react upon the brain cells.

Ether or chloroform anaesthesia does not prevent physical shock in the slightest degree. Animals operated upon under ether show most marked cell changes. But if the brain be cut off from the field of operation by cutting the connecting nerves or by blocking them with a local anaesthetic these brain-cell changes do not occur.

Indeed ether may add to the trouble. Professor Ivory Franz assures me that there is an unknown but well proven chemical change in the brain of rats that have been given ether on two successive days. Such brains take up about 5 per cent. more of Müller's fluid than a normal rat's brain. This is a constant phenomenon and shows that some change has taken place in the brain, due to etherization, other than that shown by the microscope.

Nitrous oxide does lessen chromatolysis very appreciably, but does not abolish it, and is on that account, as well as its safety, the anaesthetic of choice. In view of the foregoing facts, it becomes at once apparent that to get the full benefit of an anoci operation we must prevent noci impulses and associations from

reaching the brain before the operation, during the operation, from both physical and psychic sources, and for some time after the operation from both physical and psychic sources.

The most difficult part to manage satisfactorily is the pre-operative stage. The old careless way, still too much in vogue, of carrying patients to the operating room, or anaesthetizing room and leaving them there for a quarter of an hour, sometimes much longer, practically unnoticed, must be a frightful source of chromatolysis. The atmosphere and whole environment is reeking with noci associations and suggestions far more potent for evil than bacteria in the dust on the walls or floor.

We take no chances with the pus producing germs, for we have learned thoroughly their danger; but as yet we are too careless by far in excluding the germs of psychic shock. The time is fast coming, however, when carelessness in this particular will be considered as reprehensible as is faulty aseptic technique.

From the time the patient comes into the surgeon's hands, and operation is suggested, he should be reassured both as to the safety and the painless nature of the proposed proceeding. We can usually assure him with truth that it is as safe as a railway journey, and not more painful than many, or more wearisome. Indeed we can, as a rule, be sure that there will be no pain if the operation can be made strictly anoci.

A little time spent by the surgeon in reassuring his patient on these points and gaining his confidence will be well repaid. But don't overdo it and thereby excite his suspicion.

There should be no unnecessary purging, scrubbing, or starving. A single satisfactory evacuation of the bowels should be secured, if necessary, by a reliable purgative, and no food taken for three hours before operating. Bathing and shaving the night before may be advisable in most cases, but excitable persons had better be prepared on the table after the anaesthetic is started. Benzine iodine preparation makes this easy. An hour before operating the patient should receive an injection of morphine 1/6 to ¼ grain, with atropin or scopolamin 1/150 grain, and be left in quiet to rest and sleep until the anaesthesia is begun. It must be apparent to all that an anoci operation cannot usually be done without both general and local anaesthesia. General anaesthesia to cut off psychic shock and local to block traumatic impulses, and the one is as important as the other.

For general anaesthesia nitrous oxide with oxygen is the choice *par excellence*. It is safer than chloroform, or ether, or morphine-scopolamin anaesthesia. It is decidedly more pleasant to take and recovery is more prompt by far. It helps prevent chromatolysis.

For the local blocking a 1-400 novocaine solution is probably the best, and six or eight ounces may be used without any unpleasant symptoms following.

Quinine and urea hydrochloride may, and should, be used in the peritoneum and peritoneal cavity for their lasting effect, and may be used in the skin and muscles sparingly in a strength of 1/6 to ⅓ per cent. Stronger solutions cause infiltration of tissues and, according to some, may cause sloughing, though I have never seen it. The gas should be begun in the patient's room, in bad cases where shock is feared, without moving him from his bed, and he should be carried to the operating room only when unconscious—the anaesthetist and gas apparatus accompanying him. In less severe cases the gas may be started on the operating table. But everything should be ready and the gas flowing when the patient reaches the table. He should not be given one minute in that atmosphere, reeking with anoci association, before anaesthesia is started. Everything should be absolutely ready, and during the few seconds of necessary consciousness the patient's mind should not be left free to absorb the germs of psychic shock, but occupied by cheerful questions and conversation and assurances by the anaesthetist. Let him go under the influence of the gas with cheerful thoughts, and his dreams will be pleasant during the operation.

Do not be afraid of getting him under it too soon, or too fully. While a patient may become unconscious in three minutes he is not surgically ready for eight or ten minutes. Five minutes of this time may be used in injecting the local anaesthetic, which it takes about that long to do. A continuous weal should be made with it in the skin in the line of incision, and then the subcutaneous tissues infiltrated for an inch or two in all directions from this line. The incision should be made with a sharp knife, and every tissue, muscle, nerve, or peritoneum thoroughly infiltrated before being cut into. No rough pulling or tearing of tissues should be done, unless positively necessary, but all dissection preferably made with a sharp scalpel. In the abdominal cavity the utmost gentleness should be used to insure relaxation as well as to prevent shock. The anoci operation requires greater skill in both the anaesthetist and the surgeon than the older method, but we are rapidly acquiring it and the extra care is fully repaid in results obtained.

Clean cut wounds not only produce less shock, but heal more readily, and with less danger of infection, than torn, bruised, pinched or mangled tissues. Such surgery is well worth while. And in the abdominal cavity it has been a revelation to me to find how much easier it is to operate when one has the complete relaxation that can be obtained only with thorough blocking of the abdominal wall and peritoneum and gentle handling of the viscera. So the anoci operation tends to the making of better surgery in every way.

When the operation is finished the patient should not be rudely wakened, but spoken to in cheerful, soothing tones and assured

that everything is all right. Crile has trained his anaesthetists in bad cases to take the patient back to his room still under the gas, and to repeat to him over and over, that the operation is finished and that he is all right, while he is still partly unconscious. Thus he awakes with that knowledge, without knowing exactly how he learned it. It does not come to him as a sudden shock. Last summer I had the pleasure of seeing Dr. Crile operate on a number of cases at Lakeside Hospital in Cleveland, and though the operations included several cases of exophthalmic goitre, appendicitis, and abdominal hysterectomy for large fibroids, not a single case showed any sign of shock, and every one woke with a better and slower pulse than showed on the chart before operation. Personally I have not had such uniformly good results, but in the majority of my cases the results have been as good. With more experience and a better understanding on the part of my assistants I hope to attain this degree of perfection. About a third of my cases have had some increase of pulse rate and some nausea—but nothing to compare with that usually following chloroform or ether anaesthesia. In several cases, where quinine and urea were used, the local anaesthesia seemed to last eight days, and no pain was experienced when the sutures were removed on the eighth day. I used it in a one per cent. solution, for a year, and found complete relief of pain for days even in hemorrhoid operations and nothing worse than a brawny infiltration, which did not interfere in any way with primary union, was seen in any case. I have heard so much from other surgeons of serious sloughing following its use that I now use it in a ⅓ per cent. solution, and rather sparingly, except in the peritoneum, where it is certainly safe. When we get a perfectly safe local anaesthetic that will last for a week, we will have the ideal one for anoci operation.

In conclusion, I may say that patients who have had operations done in this manner are enthusiastic in its praise, especially those who had been previously operated upon in the old way. One of my patients, with recurring cancer of the breast, has cheerfully submitted to seven rather extensive operations for its relief with so little pain or discomfort in any of them that she did not regard them as serious ordeals.

I believe the anoci operation has come to stay; that it will be more and more generally used and brought to still greater perfection; that it is a great advance, not only in saving life in desperate cases, but in lessening morbidity, lessening both mental and physical suffering, and shortening the period of convalescence. It will have a great effect in removing the dread of the average operations, and make many submit more readily to necessary operation without the sometimes fatal delay we now so often encounter.

X-RAY DIAGNOSIS IN INCIPIENT AND MORE ADVANCED STAGES OF PULMONARY TUBERCULOSIS.—ILLUSTRATED BY RADIOGRAPHS AND LANTERN SLIDES OF TWENTY-THREE CASES.*

By Charles A. Pfender, M. D.,

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Early recognition of a tuberculous pulmonary infection will often be the indirect means of prolonging the life of a patient for years, as it will lead to the inauguration of a general therapy that will do much to further the eradication of this disease. There exists no valid reason why every means at our disposal should not be brought into action if necessary to arrive at a correct diagnosis. My limited experience leads me to infer that the average practician—and the specialist is not entirely exempted—stops far short of exhausting the list of available diagnostic methods in the study of obscure cases and only too willingly assures his patient that his lungs are "all right," or that he suffers only from a slight "bronchitis," when a more exhaustive examination would probably reveal the presence of tuberculosis. A large percentage of cases that have come under my observation in private practice were cases that had visited many physicians' offices and had received encouraging words and a cough syrup or tonic with no appreciable benefit from either; hence their dissatisfaction and persistence in applying for further medical advice. One must admit that the factor of expense enters into the equation with a not inconsiderable number of our patients, but I have yet to find a prospective patient truly apprehensive of the condition of his lungs, who remained unwilling to subscribe a fair compensation for services to be rendered, after he had been advised of the expense of time and material incurred by such an examination—and my personal powers of persuasion could not even remotely be construed as extraordinary. Nor, on the other hand, have I found it impracticable to lend personal aid to the truly indigent; in fact, some of the rarest and most valued experiences have been gained through these sources.

The cases which I desire to present have been taken partly from my service at the Tuberculosis Clinic of the Children's Hospital, partly from my private cases, and the remainder have been referred to me for x-ray diagnosis by other physicians. I have arranged them in three groups, regardless of age, for the sake of convenience and expedition in presentation, namely, incipient, moderately advanced, and far advanced cases of pulmonary tuberculosis. In some of these cases the diagnosis of pulmonary tuberculosis had been made from the clinical findings and was

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only confirmed by x-ray examination. There was gained, however, an accurate conception of the actual destruction of lung tissue which permitted a more definite prognosis. In one case of far advanced pulmonary tuberculosis the diagnosis was made by the x-ray examination alone and afterwards confirmed by clinical observation. This case had been examined by some of the best internists of Washington but the condition was not recognized. Several suspected cases were diagnosed by x-ray examination and found to belong to the moderately advanced class. Valuable aid was also furnished by the x-ray in the study of incipient pulmonary tuberculosis. Although it cannot be denied that in many instances of incipient tuberculosis physical signs may be detected long before changes occur which can be recognized by the x-ray, it still remains a fact that there are perhaps an equally large number of cases in which physical signs are not discovered until after x-ray examination has pointed out their probable location and extent. Especially is this true of deep, centrally located lesions and of cases where a thickened pleura masks the more obscure signs. In such cases x-ray examination will be of great assistance in establishing a correct diagnosis. In children where no physical signs were found, x-ray examination repeatedly revealed lesions in the bronchial glands and lungs. The ability to recognize acute peribronchial pulmonary tuberculous conditions has cleared up several cases which had remained obscure.

In arriving at a diagnosis in an x-ray examination it is well to carefully consider the personal and family history, the physical and general constitutional condition of the patient, and the results of tests which are commonly employed by clinicians for the detection of tuberculosis. In the study of these cases the von Pirquet skin-reaction test was employed whenever possible. Sputum examinations were not made in all cases, owing to difficulties interposed by external factors.

I have selected 11 incipient, 6 moderately advanced, and 6 far advanced cases of pulmonary tuberculosis of which I have brief histories, x-ray plates and lantern slides, to which I invite your attention.

INCIPIENT PULMONARY TUBERCULOSIS (11 CASES).

CASE 1a, No. 5.—Forrest H———, white, male, aged 13 years, developed cough several months ago, followed by flushed cheeks, night sweats, fever, loss of weight and "tired feeling." Paternal grandfather, paternal aunt and father died from pulmonary tuberculosis. Present status, March 20, 1913.—Well proportioned but small for his age. Examination of chest revealed rough, high pitched breath sounds over both lungs centrally; moist râles in left lung. Cough frequent. Weight, 75 pounds; tempera-

ture, 100 F.; pulse, 100; respiration, 30. von Pirquet positive +.

March 28.—X-ray examination showed faint opacity in both apices, peribronchial congestion of upper vertical bronchioles with nodular infiltration. Right hilum shadow greatly enlarged with probable gland caseation in 6th interspace. Left hilum shadow enlarged showing caseated gland; apparent congestion, almost mottling, in 6th and 7th interspace along lower vertical bronchioles.

Diagnosis.—Incipient pulmonary tuberculosis.

Prognosis.—Favorable under proper management.—Patient is improving; since June the temperature has never exceeded 99, pulse 90, resp. 24, no physical signs, no cough. No gain or loss in weight.

CASE 2a, No. 27.—E. C———, white, male, aged 6 years, had pertussis in summer of 1912, but cough persisted and, beginning in November, daily elevation of temperature, hectic flush, night sweats and increased cough were noted. Negative family history. Physical examination showed faint dulness over both apices and near 6th interspace. von Pirquet + +. Provisional diagnosis of incipient pulmonary tuberculosis. Inauguration of rigid routine followed by marked improvement. By March 1, 1913, the boy was apparently cured, gaining in weight. No cough, fever, sweats, or weakness when examined in August, 1913. The x-ray plate here shown was made after subsidence of symptoms in April. Faint opacity in left apex; right hilum shadow larger than normal with caseated nodules; apparent peribronchial congestion of left upper vertical bronchioles. Diagnosis: Arrested incipient pulmonary tuberculosis. Prognosis: Good.

CASE 3a, No. 32.—E. A———, delicate, tall, white, female, aged 23 years, caught cold at last presidential inauguration and developed racking cough; repeated attacks finally forced her to bed. Tuberculous history negative. When seen April 5, 1913, cough was severe, expectoration scanty; night sweats and weakness; pronounced loss of weight; temp. 103 F.; pulse 110, resp. 35. Physical examination showed coarse râles over sternum, apices apparently clear. Improvement followed promptly under usual treatment. von Pirquet positive +. Tubercle bacilli found in sputum. Subsequent to clinical diagnosis an x-ray examination showed slight mottling in 6th interspace below right hilum shadow, which is greatly enlarged, enclosing caseated bronchial glands. Left hilum shadow is larger than normal; upper vertical bronchiole shadows show peri-bronchitic congestion; calcified gland in 5th interspace. The prognosis was good. Patient improved, went to California in June, and considered herself entirely well in last report, about two months ago. Had gained considerably in weight; did not state how much.

CASE 4a, No. 47.—Elizabeth B———, white, female, aged 8

PLATE I.—CASE IIA, NO. 65. INCIPIENT PULMONARY TUBERCULOSIS.

Note enlarged right hilum shadow containing caseated nodules; calcified bronchial gland in left hilum shadow; thickening of upper vertical bronchi shadow with minute nodule formation.

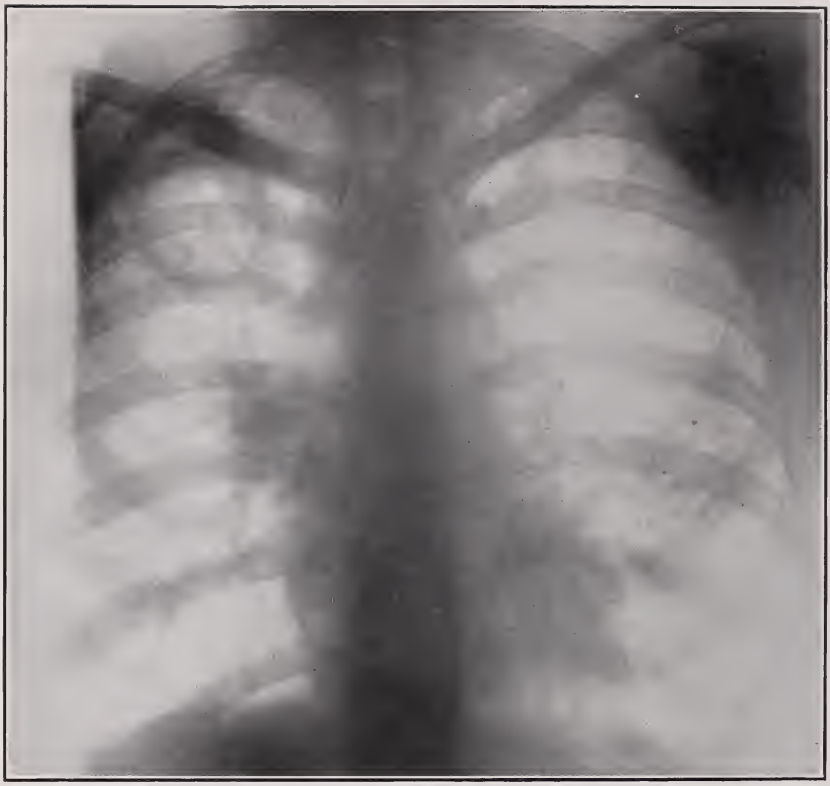

PLATE 2.—CASE 6C, NO. 1. FAR ADVANCED PULMONARY TUBERCULOSIS.

Note cavities in apices; mottling in middle third of left lung; enormously enlarged right hilum shadow radiating in all directions.

years, diphtheria at 7 ; after recovery, tonsillectomy, and adenoids removed ; irregular temperature, hectic flush, night sweats and malaise followed and persisted, accompanied by cough with scant expectoration. Family history negative. Physical examination June, 1911, showed faint râles about the 5th right interspace. Suspected tuberculous infection. von Pirquet negative. Tubercle bacilli were found in sputum. Patient was placed on routine treatment and symptoms subsided in two months and have not returned ; gain in weight has been progressive.

May 8, 1913.—Condition excellent ; physical findings negative. X-ray examination showed enlarged right hilum shadow, upper vertical bronchiole congestion with calcified nodes, apparent faint mottling of 6th interspace with calcareous lesion in 7th interspace. Left hilum shadow contains calcareous nodes, peribronchitic congestion shadow. Diagnosis : Apparently arrested incipient pulmonary tuberculosis. Although all clinical signs and symptoms have been absent for nine months or over, the prognosis is guarded and constant intelligent supervision recommended.

CASE 5a, No. 50.—Stuart F———, colored, male, aged 12 years, was referred from the Medical Service under Dr. Edgar P. Copeland to the Tuberculosis Clinic, May 10, 1913. Family history negative. Boy had malaria, measles, cervical adenitis with removal of the latter in March, 1912. Began to cough in December, 1912 ; recurrence from time to time. Physical examination showed left shoulder elevated, winged scapulae, dulness posteriorly over right suprascapular region ; dry friction rub sound between 6th and 8th interspaces, and faint moist râles on deep expiration. Temp. 99.2°, pulse 108, resp. 28. Examination a week later showed no improvement.

Several weeks later an x-ray examination was made which showed right hilum shadow enlarged, enclosing caseated glands, peribronchitic congestion, shadows of upper vertical bronchial radiations and slight mottling in 7th and 8th interspaces. On the left side the changes were less marked ; slight infiltration of ascending bronchial radiations and mottling in 6th to 8th interspace. von Pirquet not done. No sputum examination. Diagnosis : Incipient pulmonary tuberculosis. Prognosis : Good. Patient lost sight of.

CASE 6a, No. 57.—D———, white, female, aged 17 years, was first seen in June, 1913. Grandmother has pulmonary tuberculosis. Had pertussis, chicken pox and measles with good recovery. In March she had an irregular, continuous elevation of temperature which had been diagnosed as enteric fever ; patient remained in bed two weeks. History of cough for six months preceding the attack just mentioned. Constant cough at present, feels weak and "always tired," can hardly keep up for the entire day. Considerable loss of weight.

Present status.—June 16, 1913. Chest examination revealed

only faint, small, moist, shifting râles in right lung about 5th interspace. von Pirquet faintly +.

X-ray examination June 16, showed slight opacity in left apex; thickened pleura in sternal region, right hilum shadow greatly enlarged with caseated nodules and rarefied circumscribed area simulating cavity. In 7th right intercostal space within the heart shadow is a dense shadow irregular in shape and about the size of a walnut, suggestive of a broken-down caseated mediastinal gland. Left hilum shadow enlarged, and radiating shadows larger than normal.

Second x-ray examination, July 7, shows rather more decided shadow on right lower vertical bronchiole course; the density within the heart shadow has cleared up and instead there is noted a rarefied space. The diaphragm appears to be drawn up higher than normally on right side. Diagnosis: Mediastinal and incipient pulmonary tuberculosis. Prognosis: Guardedly favorable. When last seen, August 10, improvement had been progressive accompanied by increase in weight.

Case 7a, No. 60.—Regina Y———, colored, female, aged 12 years, referred to Tuberculosis Clinic by Instructive Nursing Society. Tuberculous family history. Gives a history of cough, night sweats and fever since 1911, accompanied by progressive loss of weight. Physical examination in January, 1913, revealed faint dulness in right apex, moist râles in root of right lung. Temp. 99.2 F., pulse 88, resp. 28. von Pirquet positive + +.

X-ray examination showed faint opacity in right apex, right hilum shadow enlarged and sprinkled with caseated nodules which are carried along lower vessel shadows; diaphragm appears unusually high as though it were raised by lung retraction. Caseated nodule in left hilum shadow. Plate overexposed. Diagnosis: Incipient pulmonary tuberculosis. Prognosis: Good under proper care. Continued observation at the Tuberculosis Clinic at Children's Hospital showed a gradual but progressive gain in weight and general improvement. September 20, still some cough, physical signs absent; temp. 99 F., pulse 100, resp. 26.

Case 8a, No. 75.—Alice W———, colored, female, aged 9 years, was referred from the Medical Service by Dr. Ong, August 13, 1913, with history of cough, stomach pain, fever and "tired feeling." No family history obtainable. Physical examination showed dulness in left apex and in left suprascapular space. Moist and sharp coarse whistling râles over entire right lung. Temp. ranges from 98 to 100.2 F. von Pirquet positive +, August 27.

August 30, x-ray examination showed shadow of upper vertical bronchioles enlarged, beginning at left hilum and noted as high as second interspace. Slight mottling in lateral bronchi course; shadow running to sternum from left heart shadow, margin prob-

ably due to thickened pleura. Right hilum shadow enlarged, caseated glands therein. Small spherical shadows at base of each lung. Note angular elevation of left diaphragm; probably occasioned by lung contraction, the result of infiltration in region of the 7th and 8th intercostal spaces. Diagnosis: Incipient pulmonary tuberculosis. Prognosis: Good. Child was placed under proper régime and appears to be improving.

CASE 9a, No. 20.—Alfonso C———, colored, male, aged 8 years. Since he has had pertussis, in February, 1912, he has had frequent colds, which always improved when treated. Recurrence of cough October 30, 1912. Physical examination of chest elicited very faint, moist, small râles in right apex. These soon disappeared. About March 1, 1913, he had another cough with dry, whistling râles in left lung, just below angle of scapula. April 13, moist râles over roots of both lungs, dulness about 6th rib. Temp. 99 F., pulse 100, resp. 28. von Pirquet positive +.

X-ray examination April 18, 1913, showed greatly enlarged right hilum shadow with numerous caseated bronchial glands; slight opacity in right 2d and 3d interspace region. Left hilum shadow enlarged and contains caseated bronchial glands; upper vertical bronchi shadow greatly thickened due to peribronchial infiltration. There appears to be restricted lung expansion in left 3d to 6th intercostal space lung area. Diagnosis: Incipient peribronchial infiltration with caseation of bronchial glands. Prognosis is good under proper care.

CASE 10a, No. 6.—Dorothy B———, white, female, aged 9 years, has always been frail and delicate and suffered frequent coughs and colds. Physical examination of chest negative. March, 1913, tonsillectomy and adenectomy; good recovery and gain in weight; irregular elevation of temperature, night sweats and cough are gradually lessening. Temperature ranged from 97 F. to 100 F. von Pirquet negative; sputum examination negative.

X-ray examination in March, 1913 (plate overexposed), revealed small tuberculous focus in right cervical gland; right hilum shadow greatly enlarged, numerous caseated bronchial glands; shadow of lower vertical bronchi thickened and contains small caseated shadows, also rather pointed elevation of diaphragm correspondingly. Shadow of left upper vertical bronchi is considerably enlarged while beyond left hilum shadow is pea-sized caseated nodule, and other nodules may be seen through the heart shadow. Diagnosis: Bronchial gland tuberculosis, peribronchitic infiltration, and incipient pulmonary tuberculosis. Prognosis: Good under proper treatment. Patient was last seen in July, improved in every way; no cough, fever or sweats, and was gaining a little in weight.

CASE 11a, No. 65.—Ruth P———, white, female, aged 17 years, had been losing weight from 115 to 102 pounds within a year;

complains of being tired and weak and has frequent febrile attacks with very rapid pulse. Brother died from pulmonary tuberculosis. Physical examination July 28, 1913, revealed dulness in right apex, diminished expansion on right side.

X-ray examination showed slight opacity in both apices but more pronounced in right; right hilum shadow enlarged and shows several caseated bronchial glands; the upper vertical bronchi shadow is thickened and can be traced almost to apex. Left hilum is also enlarged and contains a calcified bronchial gland; the upper vertical bronchi shadow is thickened and shows caseated foci. Slight thickening of the substernal pleura. Diagnosis: Incipient pulmonary tuberculosis. Prognosis: Good if properly treated.

MODERATELY ADVANCED PULMONARY TUBERCULOSIS (6 CASES).

CASE 1b, No. 40.—R. K———, white, male, aged 18 years, had severe attack of pleurisy and bronchitis in February, 1913; recovery protracted. Was sent into country and gained in weight but developed pain in chest, cough and rise of evening temperature to 101 F. Physical signs not detected. von Pirquet positive + +.

X-ray examination showed greatly enlarged right hilum shadow; shadow of upper and lower vertical bronchi greatly thickened and showing small caseated nodules. Opacity in right apex; caseated bronchial gland in hilum shadow. Similar changes in left hilum; rarefied spherical area external to hilum shadow apparently due to loss of lung tissue (cavity); thickening of mediastinal pleura to right of sternum. Diagnosis: Moderately advanced pulmonary tuberculosis. Patient was advised to seek an altitude of not more than 3,000 feet; went to Colorado, elevation 6,500 feet, and collapsed. Improved later, and in July sought lower altitude whereupon he continued to improve.

CASE 2b, No. 46.—J. A———, white, male, aged 36 years, gave tuberculous family history. Had rectal tuberculous fistula some years ago. Caught severe cold April 10, 1913; this was followed by prolonged rise of temperature to 102 F., pulse 110, resp. 28, expectoration viscid. First seen May 3; patient had severe racking cough, was highly nervous, suffered from insomnia and had a temperature of 101 F. Physical examination revealed dulness over lower half of right lung; small, moist râles, most marked at root of lung and extending to left of sternum. von Pirquet positive +. Examination of sputum negative.

X-ray examination showed mottling in lower half of right lung, which is more opaque than left lung. Right hilum shadow enlarged, lower vertical bronchi shadow greatly thickened showing heavy peribronchial infiltration, caseated bronchial glands in right hilum. Some thickening of vertical bronchi shadow. Left

hilum shadow enlarged, and calcified nodule size of pea in 7th left intercostal space. Diagnosis: Moderately advanced pulmonary tuberculosis. Prognosis: Good. September 26, 1913, patient appeared well, tuberculous process evidently arrested; has had no cough, fever or pain for two months, gained 20 pounds in weight. Physical signs still present in right lung. Continues regular treatment.

CASE 3b, No. 54.—Mrs. P———, white, female, aged 36 years, was referred to me for x-ray diagnosis by Dr. R. Lee Spire. Father probably died from tuberculosis. Complains of pain in upper portion of chest, and has had repeated slight arterial hemorrhages within past three months; anemic, tired, weak, and rapid loss of weight. May 20, 1913, right chest measurement at least 1½ inches less than left; increased vocal fremitus over left lung; fremitus diminished on right side; slight dulness over 2d and 4th right interspaces anteriorly; peculiar bubbling sound in 4th interspace to left of sternum; faint râles in 6th or 7th left interspace. Breath sounds diminished from 2d to 6th right interspace. Temp. 97 F., pulse 110, resp. 28. von Pirquet not made. Sputum examination negative.

X-ray examination elicited opacity in right apex, in fact of entire lung; retraction of right thorax, faint mottling at base of right lung; right hilum shadow enlarged and caseated bronchial gland; thickening of pleura extending to left of sternum; small drop heart shadow; left hilum shadow is enlarged and contains several caseated bronchial glands. Diagnosis: Moderately advanced right pulmonary tuberculosis. Prognosis: Good. Patient was put under a well-outlined treatment and improved at once. Had gained 20 pounds when last heard from, and all physical symptoms had disappeared.

CASE 4b, No. 52.—Morris B———, white, male, aged 2 years; negative family history; had bronchopneumonia three times, the last time in January, 1913; was treated at Children's Hospital for eight weeks; has had frequent coughs and colds since returning home. May 17, 1913, present status: Small, poorly-nourished child; rickety bones, pigeon chest; cries incessantly, making physical examination difficult. Moist râles in both lungs below scapulae, harsh tubular breathing over right lung; hyperresonance in upper third of left lung. Temp. 99.6 F., pulse 104, resp. 36.

X-ray examination showed opaque right apex, mottling of upper two-thirds of right lung; right hilum merges into mottled shadow. Upper third of left lung shows rarefaction and calcified nodule; pulmonic mottling from 4th interspace down. Diagnosis: Moderately advanced pulmonary tuberculosis of both lungs. Prognosis: Fair. August 27, progressive improvement followed inauguration of treatment. Gain in weight. Physical signs are gradually clearing and cough and fever have stopped.

CASE 5b, No. 11.—Stella C———, white, female, aged 11 years; negative family history. Cervical glands removed at the age of five years; has had pertussis, measles and chicken pox with good recovery. Developed severe cough in December, 1912, which lasted until February, 1913. Complains of always being tired. Cough and sore throat. Physical examination March 29, 1913, showed tonsillar hypertrophy, phthisical chest, wing-shaped scapulae. Râles over lower two-thirds of right lung; hyperresonance on left side at base of lung suggested cavity formation. Temp. 99.6 F., pulse 98, resp. 28. von Pirquet positive +.

X-ray examination showed opacity in right apex; greatly enlarged right hilum shadow with numerous caseated bronchial glands extending upward along sternal border. Left hilum shadow greatly enlarged and very opaque, contains large caseated nodules. Caseated tuberculous node, size of pecan, in 8th left interspace. Diagnosis: Moderately advanced pulmonary tuberculosis, bronchial gland degeneration and cavity formation.

CASE 6b, No. 59.—Nannie C———, colored, female, aged 9 years; tuberculous family history. Complains of cough, fever, "tired feeling" and loss in weight. February 12, 1913, temp. 104 F., pulse 112, resp. 32. Physical examination elicited fine crepitant râles over right lung; dulness on right side below scapula. von Pirquet positive +.

X-ray examination July, 1913, showed two caseated foci in right lung to right of hilum shadow, size of half dime. Some opacity to left of left hilum. Child refused to remain quiet, and plate is blurred. Diagnosis: Moderately advanced pulmonary tuberculosis. Prognosis: Fair under proper treatment. Examined September 10, gain in weight, disappearance of râles, still slight fever and cough. Some improvement.

FAR ADVANCED PULMONARY TUBERCULOSIS (6 CASES).

CASE 1c, No. 36.—Vesti H———, colored, female, aged 6 years; history of night sweats, loss of weight, feeling tired all the time and cough since March, 1913. Family history negative. Physical examination April 19, 1913. Flatness over right lung from 4th interspace down; dulness over lower third of left lung; breath sounds diminished; "sandpaper" friction rub heard over upper portion of chest; râles over entire chest. Temp. 103 F., pulse 150, resp. 70. Diagnosis: Tuberculous pleurisy with effusion. von Pirquet positive +.

April 21, 1913, x-ray examination showed opaqueness of right lung as high as 4th interspace; also slight opacity in lower left lung; miliary tubercles in both lungs. Diagnosis: Acute miliary tuberculosis complicated by pleurisy with serofibrinous effusion. Prognosis: Bad; might live six weeks. Thoracentesis and re-

moval of 13 ounces of clear, yellow fluid. Autoserotherapy of 3 c.c. and 2 c.c., respectively, on April 21 and 23. Pleuritic effusion rapidly disappeared but pulmonary processes terminated life May 14.

CASE 2c, No. 49.—William S———, colored, male, aged 6 years. Father and sister died from pulmonary tuberculosis. Boy has been ailing ever since age of 4, when he had pertussis. Has had cough and night sweats all winter. Physical examination May 10, 1913, revealed dulness over both apices down to 4th rib; hyperresonance. Moist râles in both apices. Temp. 101.8 F., pulse 116, resp. 36.

X-ray examination showed opacity of apices and upper third of both lungs, profound consolidation of lungs, pleuritic adhesions with displacement of heart to right. The high position of diaphragm is due to fluid in abdomen. Diagnosis: Advanced pulmonary tuberculosis and tuberculosis of the peritoneum. Prognosis is bad. May live three months. Patient was not seen again.

CASE 3c, No. 58.—Annie F———, white, female, aged 26, referred by Dr. W. W. Wilkinson in June, 1913. Mother died from pulmonary tuberculosis at age of 51. Patient had pertussis and measles; chicken pox at 18 left her in weakened condition. Developed chronic cough two years later. Has had night sweats and irregular periods of fever. Physical examination June 28, 1913, showed tall, thin emaciated woman, weight 102 pounds; full, free cough with scanty expectoration; left half of chest considerably larger than right. Dulness and partly flatness over entire right lung; dulness and moist râles in left apex and in middle third of left lung. Right chest measures two inches less than left. von Pirquet positive +. Tubercle bacilli in sputum.

X-ray examination June 28, 1913, shows right lung opaque, a trifle less opaque in central portion; retraction of lung tissue due to fibroid changes caused restriction of chest motion. Left side of chest shows opacity in apex and lower half of lung; apical consolidation; thickening of pleura; left hilum shadow is enlarged and contains caseated foci. Heart outline is indistinct due to pleural adhesions and thickening. Diagnosis: Far advanced fibroid phthisis. Prognosis: Bad. May live several years.

CASE 4c, No. 72.—Alberta B———, colored, female, aged 9 years, referred to Tuberculosis Clinic by Dr. Copeland, August 20, 1913. Family history negative. Has had measles and chicken pox only. Cough since September, 1912, night sweats, fever, anorexia, constipation and "that tired feeling" all the time. Physical examination revealed consolidated right apex, dry and coarse râles over both apices and near middle portion of lung. Temp. 100.6 F., pulse 116, resp. 28. von Pirquet positive +.

X-ray examination showed opacity of both apices and extending as low as 6th interspace; opacity more pronounced on right

side. Diagnosis: Far advanced pulmonary tuberculosis. Prognosis: Not encouraging under the circumstances.

CASE 5c, No. 66.—Mr. S———, white, male, aged 45; referred for x-ray diagnosis by Dr. English. Negative family history. Patient has had much pain in chest, constant cough, irregular fever and recently repeated hemorrhages which were supposed to have been gastric. Physical examination revealed very weak adult male, highly nervous, with retracted right thorax and winged scapulae. Right shoulder lower than left. Dulness in right apex and râles over central portion of both lungs anteriorly. Provisional diagnosis: Moderately advanced pulmonary tuberculosis.

X-ray examination showed opacity in right apex as low as 3d interspace; hilum shadow greatly enlarged and contains caseated nodules of various sizes; upper vertical bronchi shadow greatly thickened; lower vertical bronchi shadow also thickened, and isolated calcareous and calcified nodules near base of right lung. Left apex clear; left hilum shadow greatly enlarged and dotted with calcareous and calcified nodules; lower vertical bronchi and vessel shadow greatly thickened, showing here and there distinct calcified nodes. Some evidence of pleural thickening near sternal region. Diagnosis: Far advanced pulmonary tuberculosis. Prognosis: Doubtful. Patient left the city at once.

CASE 6c, No. 1.—White, male, physician, aged 36, complained of loss in weight and cough for several months. Negative tuberculosis history. Hyperresonance over both lungs in upper third. Had been examined by several competent clinicians who concluded that lungs were not affected. No tubercle bacilli found up to this time.

X-ray examination revealed opacity of both apices, the right more involved than the left. Large cavity size of hen egg in upper third of right lung, smaller cavity in upper third of left lung. Right hilum shadow greatly enlarged and upper bronchi shadow thickened. Left hilum enlarged and merges into typical tuberculous mottling occupying entire middle portion of left lung. Diagnosis: Far advanced pulmonary tuberculosis of both apices and middle portion of left lung. When questioned as to probable origin of the cavities he recalled a severe attack of "bronchitis" with cough, full expectoration and irregular fever about a year or more ago. Tubercle bacilli have been found in the sputum since x-ray diagnosis was made. Prognosis is guardedly favorable. An expert of international reputation hopes to effect a cure in three years.

In addition to the above I have arranged a table of information as to age, sex, color, family history, cough, fever, night sweats, malaise, hemorrhages, weight, von Pirquet reaction and tubercle bacilli:

Case No.	Age.	Sex.	Color.	F.H.	Cough.	Fever.	Sweats.	Malaise.	Hemorrhage.	Wgt.	von Pirquet.	Tubercle bacilli.
Incipient.												
1a 5	13	M	W	Neg.	Severe	Yes	Yes	Yes	No	Loss	+	Not found.
2a 27	6	M	W	Neg.	Yes	Yes	Yes	Yes	No	Loss	+ +	Not found.
3a 32	23	F	W	Neg.	Yes	Yes	Yes	Yes	No	Loss	+	Found.
4a 47	8	F	W	Neg.	Yes	Yes	Yes	Yes	No	Loss	+	Found.
5a 50	12	M	C	Pos	Yes	Yes	?	Yes	No	Loss	Not made	Not looked for.
6a 57	17	F	W	Pos	Yes	Subnormal.	No	Yes	No	Loss	+	Not found.
7a 60	12	F	C	Pos	Yes	Yes	Yes	Yes	No	Loss	+ +	Not found.
8a 75	9	F	C	?	Yes	Yes	No	Yes	No	Loss	+	Not found.
9a 20	8	M	C	?	Yes	Slight	No	Yes	No	Loss	+	Not looked for.
10a 6	9	F	W	Neg.	Yes	Yes	Yes	Yes	No	Loss	Not made	Not found.
11a 65	17	F	W	Pos	Slight	Yes	Yes	Marked	No	Loss	Not made	Not found.
Mod. adv.												
1b 40	18	M	W	Neg.	Yes	Yes	Yes	Yes	Yes	Loss	+	Not looked for.
2b 46	36	M	W	Pos	Yes	Yes	No	Yes	No	Loss	+	Not found.
3b 54	36	F	W	Pos	Yes	Subnormal.	No	Yes	Yes	Loss	Not made.	Not found.
4b 52	2	M	W	Neg.	Yes	Yes	Yes		No	Loss	+	Not looked for.
5b 11	11	F	W	Neg.	Yes	Yes	?	Yes	No	Loss	+	Not looked for.
6b 59	9	F	C	Pos	Yes	Yes	No	Yes	No	Loss	+	Found.
Far adv.												
1c 36	6	M	C	Neg.	Yes	Yes	Yes	Yes	No	Loss	+	Not found.
2c 49	6	M	C	Pos	Yes	Yes	Yes	Yes	No	Loss	Not made	Not looked for.
3c 58	26	F	W	Pos	Yes	Yes	Yes	Yes	No	Loss	+	Found.
4c 72	9	F	C	Neg.	Yes	Yes	Yes	Yes	No	Loss.	Not made	Not looked for.
5c 66	45	M	W	Neg.	Yes	Subnormal.	No	Yes	Yes	Loss	Not made	Not looked for.
6c 1	36	M	W	Neg.	Yes	Moderate	No	Yes	No	Loss	+	Found.

In conclusion I wish to state that x-ray treatments have been employed in some of the cases with good results. An important feature is the prompt cessation of pain after x-radiation.

Dr. Ramsburgh said that the x-ray plates in these cases in the absence of the clinical history to go with them would mean nothing; with the clinical data, however, the skiagraph was of the greatest assistance. The pictures above are without value for determining whether lesions indicated by them are quiescent or active; but with the clinical history, a pretty conclusive opinion could be formed. He advised a skiagraph in all suspicious tuberculous cases with doubtful or no physical signs present. He had enjoyed the paper and the exhibit of plates very much indeed.

Capt. Christie, U. S. A., expressed his appreciation of the paper and of the plates. He wished to call attention to features of these skiagraphs which had been studied extensively by H. Kennon Dunham, of Cincinnati, and which he called the trunk of the vertebral column, the trunk of the first interspace, and the trunk of the second interspace; these three markings of the plates with the shadows contained within them were of the greatest value in the study of suspected cases of incipient tuberculosis. The study of these spaces should not be neglected, of course, in more advanced cases. Dr. Christie called attention to this matter because Dunham had had an enormous experience in the skiagraphy of pulmonary tuberculosis and his opinion merited great respect. Personally, Capt. Christie did not attach much importance to the hilum shadow in incipient cases.

Dr. Groover wished to congratulate Dr. Pfender upon his presentation of the subject. The internist had been slow to avail himself of the resources of this means of examination and Roentgenologists had been slow to develop the necessary skill to make these resources of value. The chest lends itself admirably to Roentgen diagnosis. Its routine examination by this method is comparable in value to the routine Roentgen examination of fractures. He agreed with Dr. Christie as to the relative unimportance of the hilum shadow in adults; in children, he was inclined to believe it of significance.

Dr. Pfender said that in children, enlargement of the hilum shadow pointed to early, incipient lesions and should lead to careful study of the plate for evidences of trouble elsewhere; such evidence should lead also to careful study of the chest by other clinical means. He ventured to think that in adults enlargement of the hilum shadow was indicative at least of tuberculous changes in childhood.

ABSCESS OF THE LIVER; A STUDY OF NINETEEN CASES.*

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While abscess of the liver is not so common as appendicitis or some of our other surgical infections, it is not so uncommon as it is generally thought to be, and this often leads to cases being overlooked by excellent men, with all the modern means and aids to diagnose at their command. Solitary abscess of the liver, a curable disease, is too often found on the autopsy table. During the past fourteen years I have treated nineteen cases of hepatic abscess, fourteen single and five multiple; seventeen of these I have operated upon, with recovery in all the single cases. My experience has been mainly with a class of patients who had been exposed to tropical infections, and we would expect to find this disease much more frequently in these than in patients not so exposed, but we must not be misled and only look for this disease in those from the tropics. Even if tropical life was necessary for the development of the disease, which is not the case, every practitioner should be on the alert for this condition, which is so amenable to surgical treatment when discovered in time, and so absolutely fatal when overlooked. Of the nineteen cases discussed here, only eight were seen in the tropics, and eleven in the United States, most of them in or near Washington. Both soldiers and civilians who have had varying periods of tropical residence are returning to us in ever increasing numbers.

Amebic dysentery is quite common in this country, and I have seen a number of cases which developed in the northern States without ever having visited the south. Only one of the hepatic abscesses, considered here, occurred in a patient who had never been in the tropics, but several other such cases have come to my knowledge, and I believe that liver abscesses, of the so-called tropical or solitary type are fairly frequent in the United States. In the seventh edition of Osler's "Practice of Medicine" we find this statement: "It is the common variety of dysentery throughout the United States." In his eighth edition he modifies this and says, "It is a common variety of dysentery throughout the United States." From what we know of the life history of the ameba hystolytica—a parasitic protozoon, very resistant to external natural conditions, and of long life, both within its host and after evacuation,—it is not at all improbable that the disease is becoming more common in this country.

We all know that there are two varieties of liver abscess, the

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pyaemic *occurring, usually as part of a general infection with pyogenic organisms,* which are usually multiple, and the solitary, complicating some ulcerative lesion of the intestinal tract, and often called tropical or amebic. It is a misnomer to call all solitary abscesses tropical or amebic, as solitary abscess of the liver can be caused by pyogenic organisms entering through any radicle of the portal circulation, systemic circulation, or by way of the lymphatics.

The cases in this series were all probably amebic, although five of them were multiple and quite a number of them were undoubtedly due to mixed infections. Just what part the ameba plays in the production of hepatic abscess is not definitely known, whether it causes the abscess alone or in association with other organisms. Kartulis, in 1887, first noticed ameba in the pus and walls of liver abscesses, and this observation was later confirmed by Osler, Councilman, La Fleur and others. Within the human host the ameba seems to live almost indefinitely, probably lying in the encysted state, and after months or even years may cause recurring attacks of dysentery or hepatic abscess.

In 1908 Major Russell, at the Army Pathological Laboratory, in this city, showed me active living ameba, cultivated from the encysted form, which had been obtained from a dysenteric stool in Manila, by Musgrave, seven years prior to the time it was shown to me. For thirteen months the encysted form had been lying dry and neglected on dry agar in a Petri dish in a dresser drawer. By inoculating fresh agar containing peptone and a small amount of salt with the dormant encysted form the amebae became actively amoeboid, and were kept in this state by feeding them with bacilli of the colon group, such as cholera, typhoid or colon. This is probably what takes place in the human body when cases relapse or a hepatic abscess complication develops months or even years after an apparent cure.

The predisposing causes of abscess of the liver are alcohol, exposure, malaria and other causes of hepatic congestion. The exciting cause in many of the solitary cases, is the ameba histolytica, possibly aided by some other organisms. With one exception all the cases considered here gave a clear history of dysentery, although in seven the amebae were not found in repeated examinations of the stools, pus or sloughing walls. The question whether the amebae alone are the cause of the abscess, or whether the condition is caused by the amebae associated with other organisms, is still a mooted question. Councilman and La Fleur believe that the amebae alone cause the abscess. Krouse, Paskuale and others believe that other organisms associated with the amebae, coôperate in producing the abscess. It seems quite likely that the ameba alone can produce abscess of the liver, and that these sterile abscesses—sterile except for the ameba—can

be carried for months or even years, with few symptoms or physical signs, and at some later time the abscess may become secondarily infected with pyogenic organisms. This would account for the prolonged history of these cases, with absence of marked symptoms and physical signs, the absence of a decided leucocyte increase in cases with sterile abscesses, and the decided leucocytosis and other septic symptoms in the cases with mixed infections.

The ameba is an excellent carrier of microorganisms; it incorporates more than it can digest, and can often be seen disgorging them and strewing them along its path as it crosses the field of the microscope. This may be the case when it enters the portal circulation, and is carried, conveying pyogenic organisms, to the liver. Possibly in this way a mixed infection may take place at the time of the original invasion of the liver, the pyogenic organism later dying in its own products and leaving the pus sterile, except for the ameba. We see sterile abscesses in cases of pyosalpingitis, where the organisms have died out; so why not in the liver? Subsidence of the acute symptoms would then occur, and the quiescent period of the disease be established. Whether these abscesses, which remain latent, often for long periods of time, are caused by the ameba alone or are associated with other organisms, we know that at any time septic symptoms may appear, with an entire change in the clinical picture of the case, and often with the formation of secondary abscesses in other parts of the liver, and the conversion of a condition amenable to successful surgical treatment into a hopeless one.

Ewald says, "The liver forms a sort of catch-pit between the systemic and portal circulations, which receives all the toxic material absorbed from the bowels and either holds it or gives it little by little to the blood, or destroys it, or excretes it again with the bile into the intestines." In this way the latent abscess is secondarily infected, and having remained quiescent, giving few symptoms for months or possibly even several years, we suddenly get all the toxaemic symptoms characteristic of pus, rigor, irregular temperature, rapid pulse, sweating, pain and tenderness, and marked increase of the polynuclear leucocytes; all the symptoms characteristic of pus appear, and we have the picture of liver abscess as usually described in books on surgery. At this stage the symptoms of tropical abscess are the same as those of suppurative hepatitis from other cause. If the abscess is not discovered and relieved by operation before the secondary infection takes place, we may find multiple abscesses at necropsy.

A considerable number of the multiple cases are single in the early stages and form secondary abscesses later. Even in the stages where the symptoms are so characteristic of pus, the location of the abscess is frequently overlooked and quite often

found only on the autopsy table. The severity of the symptoms and rapidity of the course will naturally depend on the organism causing the secondary infection.

The following three cases support the belief that a sterile abscess can exist in the liver for long periods with comparatively few symptoms, and that the septic symptoms which develop later in the disease are due to secondary infections with pyogenic organisms. These cases also show the difficulties of diagnosis, owing to the obscure symptoms and physical signs; the treatment and after treatment and results.

I will read short histories of only three or four of the most interesting cases. They are numbered in the order in which they were seen.

The first case is a purely amebic abscess without secondary infection, where the general health had suffered less than in any other case I have seen.

CASE No. 4.—Corpl. H. G., 21st Inf., age 27, weight 156 pounds, normal weight 165 pounds. Family history negative.

Personal History.—Healthy as a child, measles the only illness he remembers. Very moderate drinker. Denies specific disease. Tropical service, in the Philippines, eighteen months. Had slight attack of dysentery in August, 1900. He was not very ill and did not go on the sick report.

Present Illness.—Began to have a feeling of weight and discomfort in the right side and occasional shooting pains in the right scapula and shoulder five months after his attack of dysentery. He had no dysentery nor diarrhoea at this time, nor has he had any since. Bowels have been constipated most of the time. Soon he began to have slight fever, ranging from 99 F. to 100 F., but this was not constant. The onset was very gradual and he did not have any chills. He lost about ten pounds in weight and spent about half of his time on the sick report, and during the remainder of the time he performed full duty. From Feb. 1 to Aug. 15, 1901, when he came under my observation, he had appeared on the sick report with the following diagnoses: acute gastritis and malarial fever, remittent type; chronic gastritis and dilatation of the stomach; malarial fever, intermittent, tertian, and hepatic congestion; recurrent dilatation of the gall bladder; cholecystitis and cholangitis with dilatation of the stomach. These diagnoses were made by as many different surgeons.

On August 15 he walked into the hospital looking in very fair health, of good color, and only a few pounds under weight. Temperature 99 F., pulse 88. He did not look in the least septic; there was no sweating or history of sweating. There had been no diarrhoea for ten months. Bowels were constipated. Stool

examination was negative for amebae. Leucocytes were 10,000 per cm., reds 4,400,000; hemoglobin 80 per cent.

Physical Examination.—Chest expansion limited on the right side. Little or no enlargement of the liver upwards. Heart and lungs negative. Abdomen: Marked, tense swelling in the right hypochondrium, very tender on palpation and flat on percussion. No fluctuation made out. Muscles on right side of abdomen tense and rigid. Costal arch bulged forward, right side at costal margins 4½ inches larger than left side.

No aspirating was done, as an exploratory incision was considered preferable to aspirating through the abdominal wall, followed by direct aspiration of the liver, if necessary. Aspiration which is harmless through the intercostal spaces, where the needle passes through the adherent pleura, diaphragm and liver, may be dangerous in the abdomen where it may cause the rupture of a tense abscess with possible infection of the peritoneum.

Operation.—Patient walked into the operating room and climbed on the table. Anaesthetic ether-incision slightly to right of median line over swelling. The visceral and parietal layers of the peritoneum were found extensively adherent and the abscess was opened immediately without invading the general peritoneal cavity. About 400 cc. of thick, chocolate colored liver pus were evacuated. This is characteristic of the pure amebic cases and is broken down necrotic liver tissue and blood rather than true pus. A microscopic examination done in the operating room while the operation was being completed, showed many actively motile amebae in the pus. A large, thick walled drainage tube was inserted and stitched to the skin, and the wound was partly closed.

On the third day irrigations with a 1-2,000 solution of quinine were begun. The drainage tube was not removed or shortened until it began to be pushed out of the wound by the contraction of the abscess cavity. As the size of the liver diminishes there is apt to be a lack of correspondence between the opening in the chest wall and the opening into the abscess cavity; if this is disregarded, and the drainage tube removed too soon, it will often be difficult to replace it through the tortuous tract; faulty drainage results with the possibility of an unnecessary second operation. Repeated examinations of the pus from the abscess and from the sloughing walls failed to show organisms other than the amebae. No secondary or mixed infection had occurred, which accounted for his good general condition and absence of septic symptoms. I think he undoubtedly had his abscess for nine months if not longer. I have given this case in full as it brings out the method followed in these cases. I aspirate in exploring through the chest wall but not through the abdomen; a portion of one or more ribs is excised, if necessary, avoiding

opening the pleural cavity if possible; if this should be opened I try to close it before draining the abscess, to prevent its possible infection. If this is not possible I drain directly through the pleural cavity.

The lung is usually adherent to the diaphragm above, the liver to the diaphragm below; the two layers of the pleura are so frequently extensively adherent that it is often possible to open the abscess without opening either the general pleural or abdominal cavities.

If the cavity is opened the adhesions often aid by preventing the collapse of the lung. If a dysentery exists that resists medical treatment a caecostomy, which I believe to be preferable to an appendicostomy, should be done, as this operation gives excellent results in chronic amebic dysentery.

Case No. 9.—Captain 5th Cavalry, height 6 feet 2 inches, weight 135 pounds, normal weight 180 pounds. Dysentery in Philippines in 1901. Continued to do duty in the field, and dysentery grew steadily worse, and became chronic. In 1902, while still in the Philippines, he had a severe attack of pain in the right side, in the region of the liver. He does not remember any chills, but he had fever and was in bed ten days. Pain was severe when he took a long breath, coughed or jarred himself. He returned to the United States late in 1902, on account of chronic dysentery. At this time his side gave him little trouble, although he was always conscious of some discomfort, especially after exertion, and a feeling of weight. He recovered from the dysentery shortly after returning to the United States. Has never been in good health since his Philippine service. Since his return to the United States he has not weighed more than 145 pounds, normal weight 180 pounds, and he has never felt well. He came under my observation in 1906, and gave the following recent history: Three months before I saw him he began to rapidly grow worse with general malaise, headache, loss of flesh, evening rise in temperature and sweating. He does not remember any chills, at the onset.

He grew steadily worse, and when coming under my care was only keeping up by great will power and the use of strong stimulants. Temperature was ranging from 100 to 102 F., and sweating was profuse. He had a cough with expectoration and thought he had pulmonary tuberculosis. He had become despondent and was drinking harder than ever before. He was doing full mounted duty and had not been on the sick report during the year. Two days before his operation he took his troop on a twenty-five mile practice march. Complained of a feeling of weight in his right side but not much pain when quiet. Jolting caused pain, and his punishment while trotting his horse was severe. He does not remember having any pain in the right

shoulder. He was quite uncomfortable while lying on his left side. Examination of a mucopurulent expectoration, which was present, proved negative for tubercle bacilli and ameba. Aside from the moderate emaciation the physical signs were not very marked. The expansion of the right side was restricted, and there was diminished respiratory murmur over the right base. Right side at the level of the seventh rib in mammary line was one and a half inches larger than left side. The liver dulness was increased upwards behind and in mid axillary line, but very slightly in front. The abdomen was negative except for moderate discomfort on deep pressure over the epigastric region and right hypochondriac region. *Blood examination.*—Leucocytes, 18,000 per ccm.; reds 3,600,000; hemoglobin 50 per cent. A tender spot which was found on deep pressure over ninth interspace in mid axillary line was used as a guide, and a long aspirating needle, of considerable caliber was passed downward and inward into the liver, and characteristic liver pus oozed through, without aspiration.

No living amebae were found in the pus from the center of the abscess, but active, living amebae made their appearance in the discharge from the wound several days after the operation. This is often the case. They are either dead or in the encysted state in the debris in the abscess cavity, and appear alive and in the ameboid state only after the walls begin to slough. Pus from the center of the abscess and later from the sloughing walls contained staphylococci.

Operation immediately followed the aspiration, the needle left *in situ* as a guide to the abscess. About two inches of the ninth rib were excised, in mid axillary line, and pleura was found transfixed by needle, and unintentionally opened. The pleura was then closed with catgut sutures and part of the tenth rib excised. Narrow pointed haemostatic forceps were then pushed into the abscess cavity, opened and withdrawn open. About 600 cc. of thick dark pus, were evacuated, and a large heavy-walled drainage tube inserted. This patient made a very rapid recovery and two months after operation was discharged, having gained thirty-six pounds. I have not seen him for six years, but have heard from him from time to time, and he has remained on active duty, with no recurrence of his abscess.

This case is of special interest for the following reasons: (1) Its very gradual onset. (2) The possibility of the patient's having had liver abscess ever since his attack of right-side trouble in the Philippines; had the abscess become secondarily infected, or reinfected, three or four months previous to his operation, when he began to show marked septic symptoms. (3) His ability to perform full mounted duty up to the time of his operation. (4) The few and obscure physical signs. The difficulties

of diagnosis during the latent period and even later are very well shown by this case. He passed a rigid physical examination for promotion, when he undoubtedly had his abscess. He had consulted many doctors and was thoroughly convinced he had pulmonary tuberculosis.

Case No. 15 was under my observation almost daily for eighteen months after I had made a diagnosis of hepatic abscess, without being able to persuade him to submit to operation or even aspiration. During a period of comparative freedom from symptoms he left the hospital and went to New York; there he had an exacerbation and applied for admission to one of the large New York hospitals, and made his own diagnosis of liver abscess, telling the attendants what I had told him. Both the medical and surgical services of the hospital had a try at him and decided he did not have liver abscess. He was not satisfied, and left the hospital and came directly to Washington to me; two days later I aspirated, found pus, excised part of a rib and evacuated a large abscess.

Sir Patrick Manson says that "of all the grave tropical diseases none is so frequently overlooked as abscess of the liver." Acute sthenic cases are readily recognized; not so the insidious asthenic cases. The novice in medicine is some time in realizing that grave disease of so important an organ as the liver may, for a long time, be unattended by urgent symptoms, whether local or constitutional or both." This failure to realize these truths about abscess of the liver is not confined to the novice, but is quite general among excellent diagnosticians.

The first case I had I mistook for a case of empyaema and only discovered my mistake during operation. The case was in the latter stages of the disease with many symptoms and physical signs.

Malaria is the disease for which it is most commonly mistaken. Osler says he hardly ever meets a case of liver abscess which has not been drenched with quinine.

Case No. 12 was discovered purely by accident. He was in isolation on account of having been exposed to measles. The nurse called my attention to the fact that he was running a slight temperature. On questioning the patient I found he had a history of dysentery in the Philippines and had never been real well since, although he was doing full duty. I considered that the gradual deterioration of health, the history of dysentery, the evening elevation of temperature and pulse, and localized tenderness on deep pressure, indicated exploration of the liver by aspiration. I explored with a needle of fairly large caliber, and found pus. This surprised both my assistant and the patient. The former had not been in favor of aspiration and the latter had not thought of his liver as the cause of his ill-health.

Recurrences of the abscess, possibly filling up of the old cavity, but more probably the formation of secondary abscesses, are fairly common. Four of my cases I have seen with recurrences, necessitating secondary operations. Some of those which have been lost track of may have had. Two of the cases have been operated on three times for abscesses situated in different parts of the liver. Three cases have been in my office recently who, from the cases I have cited one would be led to believe that, suspecting a hepatic abscess, exploration with an aspirating needle is all that is necessary to confirm one's suspicions and to locate the site of the pus in the liver. This is, however, far from being the case, and one may aspirate all around and even through an abscess without getting pus. I have only told you of the cases I found, not of those I failed to find on aspiration.

In case No. 14 I aspirated many times, being convinced there was an abscess present. I finally located the abscess by a large exploratory incision parallel with the costal margins. Passing my hand over the surface of the liver, under the ribs I located an area of adhesions and induration in the center of the dome of the right lobe. It was then drained by excising part of a rib and entering the abscess through the adhesions without liberating pus into either the abdominal or thoracic cavities; the wound in the abdomen being closed without drainage.

The fluoroscope and the radiograph have aided in several of the latter cases.

Following is a summary of the cases:

Seen in the Tropics	8
Seen in the United States, all but two in Washington	11
Amebae in stools or pus from abscess	12
Amebae not found	7
Dysentery at time of operation or death	12
History of dysentery but none at time of operation	6
No history of dysentery or diarrhoea	1
Contracted in the Philippine Islands	15
Contracted in Cuba	1
Contracted in United States	1
Not sure where contracted	2
Single	14
Multiple	5
Recoveries	14
Recurrences	4
Died	5

All the single cases recovered (operated upon). One single case, not operated upon, died. All the multiple cases died.

Capt E. B. Vedder, U. S. A., expressed his appreciation of the opportunity to hear the excellent paper. He had recently seen a frank case of amebic dysentery in a gentleman at Warrenton, Va., who had never been out of the country. Capt. Vedder believed that amebae may cause liver abscess quite independently of other organisms, and for the following reasons: (1) The pus of amebic abscess is often sterile; (2) the late appearance of amebae in the pus, when the walls of the abscess cavity begin to break down; (3) incubated amebae quickly die; but the amebae in the liver are living and cause abscess by their vital activities. Amebae very quickly disappear from the intestines under emetine treatment and the lesions at once heal. Liver abscess may also be treated with emetine, and an abscess may spontaneously disappear after being so treated. Such cases have been checked up by x-ray diagnosis. There have been fifteen cases of liver abscess treated by injections of emetine, according to the literature; also some cases of hepatitis and some of operated, but uncured, abscess. All recovered. That there should be fifteen cases in the literature with fifteen recoveries is rather remarkable. Mueller, in Hong Kong, had 25 per cent. mortality, and Dr. Webb's series had a mortality of 20 per cent. It would seem from the figures that emetine ought to be used. The drug is comparatively harmless in a dose of ½ grain hypodermatically; but intravenously he regards it as dangerous. The fatal dose for rabbits is .025 mgm. per kilo. Whether emetine can cure liver abscess without drainage will probably be answered in the negative; but after drainage has been made, emetine should be given and a prompt recovery may be expected.

Dr. Vaughan found the paper very interesting. The army surgeon has the advantage of the civil surgeon in this disease. Dr. Vaughan would inquire, first, whether the colored race enjoys any immunity from this disease? He had seen no mention of its occurrence among negroes, although he had himself seen two cases in negro men. He had also seen liver abscess among deep-sea sailors (who had visited the tropics) and had met with the same condition among Mississippi River sailors. He agreed with Dr. Webb's opinion that liver abscess is first solitary, and then secondary foci appear. There is also a form of multiple abscess due to blood infection. He had seen no case of liver abscess in women. One of his negro cases was in Evansville; the man was a laborer, 45 years old; he had been sick for a year with what was supposed to be malaria, having had chills and fever and sweats. At the operation the liver was found to extend down to the pelvis; eight liters of pus were discharged through the incision. Recovery was complete. "Pepper's System" states that when liver abscess terminates by spontaneous evacuation, 50 per cent. of such cases point through the diaphragm and discharge

through the lungs. Spontaneous rupture may also occur through the intestine, the stomach, the vena cava, almost any conceivable route, but last of all through the skin.

Dr. Borden had listened with interest to Dr. Webb's paper. He had seen many cases of liver abscess and had operated on many. As to the etiology, the vast majority of the cases of solitary liver abscess are due to the *ameba histolytica* alone; there is usually no mixed infection. Dr. Borden felt positive about this for two reasons: (1) Cultures of the pus have repeatedly proven sterile; (2) infection of the peritoneum and of the pleura does not follow evacuation of the pus through the abdomen and the chest respectively, unless from infection from the outside. The majority of the cases seen by him came with an erroneous diagnosis, with almost any diagnosis except that of abscess. It is important to remember this because in this climate we are not on the outlook for the disease and are apt to overlook it. For the diagnosis a careful and complete history is necessary; the majority of the cases will give a history of dysentery, although the dysentery may long ago have been cured. The leucocyte count is an important and suggestive feature, and is an additional argument against mixed pyogenic infection. Dr. Webb's case with a leucocyte count of 18,000 is the highest that Dr. Borden had ever encountered. The count was usually about 14,000 in pure amebic abscess. As to the operative procedure, unless the abscess is pointing, aspiration is of doubtful expediency. When more obscure, exploratory incision is best, with direct aspiration when the abscess is hard to find. Once found, the drainage of an amebic abscess is comparatively safe. Secondary infection is not usual.

Dr. W. P. Carr said that the erroneous idea might be aroused by the discussion that abscess of liver seldom occurs except from amebic infection; liver abscess is by no means always caused by the *ameba histolytica,* and it is only the abscess caused by this organism that is benefited by emetine treatment. The majority of cases of liver abscess in this country are due to contiguous infective processes, notably suppurative appendicitis. Liver abscesses may reach enormous proportions without any noteworthy symptoms. Of the twenty-five cases seen by him, not one was of the amebic variety.

Dr. Abbe had had no tropical experience and therefore would not attempt to speak on the subject, but he wished to ask Dr. Webb what is the cause of the liver abscesses, solitary in character, which he had so often seen among the Polish Jews in New York and who had never been in the tropics? Is there any other cause than the *ameba histolytica* for the solitary liver abscesses that are usually attributed to tropical dysenteries?

Dr. Webb said, concerning leucocytosis, that he had seen a

number of cases, with active amebae in the pus, with a leucocyte count up to 35,000; when the count is so high, no doubt, there is a secondary infection. The usual leucocyte count, as had been stated by Dr. Borden, is from 10,000 to 14,000. Secondary infection may, however, occur quite early, and too much dependence should not be placed upon the leucocyte count for diagnosis. He believed that the cases spoken of by Dr. Abbe were probably due to the ameba.

WHOLE MILK DILUTIONS IN FEEDING NORMAL INFANTS.*

By James A. Gannon, M. D.,

Washington, D. C.

Most of us have experienced that hopeless sensation which comes when we attempt to discover in the standard text books on pediatrics, the key to the solution of a problem involving the nourishment of a particular baby. We have all been struck with the profuse quantity of glittering generalities which adorn the pages and the final complicated table of formulas for infants at different ages. As a result of our perusal we found ourselves just about where we started, possessing a vague idea of the subject but, owing to our attempt to digest the table of formulas, a bit more confused than ever. The issue has been clouded by the pediatric specialists, and the poor, general practitioner who seeks his knowledge of practical infant feeding in their writings is at a disadvantage. He has not the time nor the inclination to memorize these formulas, and as a result, he many times falls back upon one or the other of the advertised baby foods, the accompanying directions of which throw the burden of responsibility upon the mother.

The general practitioner who covers the rest of his field with much credit to himself has allowed the important question of infant feeding to become atrophied from disuse, and has allowed the ubiquitous and omniscient grandmother to direct her campaign against the digestive organs of the infant and to put into practice the theory of the survival of the fittest alimentary canal.

My purpose in presenting this paper is to suggest a simple method of infant feeding which I have found satisfactory, and give a few ideas, for which I claim no originality, but which I have found of great assistance in my practice.

None will gainsay that the best possible nourishment for the human animal during its first year of life is the milk of a healthy

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woman, and any attempt to imitate mother's milk by modifying cow's milk must needs meet with failure. The two milks are not alike. If they were, the question would long since have been solved. We should recognize the differences not only quantitatively but also qualitatively as regards the classes of food stuffs. Recognizing these differences between the two milks we must attempt to substitute and not imitate mother's milk. If by modifying cow's milk we can get it to agree with the infant and make him thrive and grow normally, we have succeeded, regardless of whether or not our formula agrees with the formula put down in the text books for an infant of the particular age of the one we are attempting to feed.

Our aim in selecting a milk for infant feeding should be to obtain a clean milk from a herd of ordinary healthy cows. These cows should be tuberculin tested, and the production and handling of the milk should conform with our present-day ideas of cleanliness. If the milk when consumed contains not over 30,000 bacteria to the cubic centimeter and we are reasonably sure that such organisms as the tubercle bacillus, the typhoid bacillus and the diphtheria bacillus are not present, we are safe in using it raw. If, however, the bacteria count exceeds this number and we are not certain as to the handling of the milk, it should be subjected to heat and brought to 60 degrees C., and maintained at that temperature for twenty minutes. My preference is for raw milk, provided I know its source and history. The attitude of those who have made milk their hobby, in insisting that unless milk is germ proof it is unfit for infantile consumption, may do much harm by their public expression of these views. One of two results may follow. Either the cost in producing such milk will make it prohibitive for use by the majority of babies or it will drive the mother to whom a little knowledge is a dangerous thing to avoid milk entirely and feed her baby condensed or malted milk, with consequent deleterious results.

It was David Harum who remarked sagely concerning the advantage of a certain number of fleas to a dog. There is evidence to show that the gastric secretions of the infant are inimical to the development of most bacteria, and it is just possible that a certain number of germs may be good for a baby. At any rate, if the infant's nutrition is properly kept up and his intestinal tract not upset by injudicious feeding, his resistance will be such that he can take care of a certain number of bacteria.

A few years ago our pediatric brethren were wont to blame all intestinal upsets occurring in the course of the artificial feeding period, upon the proteids, and they claimed that the fats and the carbohydrates played only a minor rôle. Test-tube experimentation had proven beyond all doubt that the proteid casein upon the addition of gastric secretion was precipitated in large,

tough curds, and because of this we were advised that, no matter what else we did, in changing the formula we must decrease the proteid intake. More recent investigators, notably Grulee of Chicago, and Czerny and Keller of Germany, have declared that the churning which takes place in the infant's stomach easily breaks up this curd and renders it digestible by the infant. The latter-day writers are inclined to give the proteids a minor rôle and to hold the fats and the carbohydrates as the principal offenders, more particularly the fats. My experience in following the modern teachings seems to confirm this view.

It takes the normal infant's stomach from three to three and one-half hours to empty itself after a full meal, and if we take this hint to lengthen our interval between feedings and allow rest for the stomach, the infant will be more comfortable. Under the system of two or two and one-half hours' interval the stomach does not have an opportunity to rest, and we have in it at the same time food which is raw and food which is more or less completely digested. This condition of affairs favors vomiting and other evidences of gastric disorder. It would seem then that a longer interval would be advisable, provided it can be inaugurated without harm to the infant or the auditory apparatus of the neighbors. The Germans advise that we make this interval four hours from birth, and if we wish to institute this interval after the infant is older, we can do so and get him accustomed to it in a very short time. It has been demonstrated that under this method the gastric capacity is much greater than was heretofore supposed, and instead of figuring that because an infant is three months old we must give him three ounces at a feeding, we can give him from five to six ounces without fear of regurgitation. In this matter, as with so many other matters in treating infants. we must consider the individual infant and vary our amount accordingly. The ability possessed by the infant to digest and assimilate the different classes of foodstuffs is expressed by the term "tolerance," and his tolerance for food varies at different ages. He can tolerate fat, for instance, up to a certain point, and when this point is passed his weight becomes stationary or less than it was before; he becomes obstinately constipated, fretful, etc. If he is put back on the amount of fat he could previously take care of, there is no improvement in his condition. The fat should be removed as far as possible by skimming the milk, and thereafter cautiously increased until we get it back to the infant's normal tolerance. The infant's tolerance for sugar varies with the kind of sugar and the amount used. Thus it has been found that infants who cannot tolerate cane sugar or milk sugar in sufficient amounts will do very nicely on malt sugar.

Heubner and Rubner have shown that a normal breast-fed infant requires about one hundred calories of food to the kilo

weight, which is about forty-five calories to the pound in twenty-four hours, and, while this does not serve as an absolute criterion, it shows the amount which if exceeded may cause difficulty. As the infant grows older it seems to need less food, and so from the sixth to the ninth month it is well not to exceed forty calories. Grulee quotes Allan in saying that in twenty-four hours it requires the amount of protein contained in one ounce of milk to the pound weight of the child to maintain theoretically a nitrogen equilibrium, and that, in order that the child may build up sufficient nitrogen in his tissues, the protein of about one and one-half ounces to the pound weight is needed. It is not wise to increase the fats beyond those contained in one and one-half ounces of 4 per cent. milk, and we are advised to make up where it is necessary by adding carbohydrates. The infant, by the way, can digest starches in considerable amount as early as the third month. Knowing, then, the caloric value of milk and the carbohydrates we use and the caloric necessities of a given infant because of its weight and age, we are in a position to plan its dietary campaign with more or less accuracy, and in case of disagreement of one or the other of the constituents, it will be an easy matter for us to rearrange our program.

Milk sugar and cane sugar may be used in infant feeding, but my preference is for malt sugar. Mead and Johnson put up a convenient preparation which they call Dextri-Maltose and which consists of maltose 51 per cent., dextrin 47 per cent., sodium chloride 2 per cent., and which has a food value of about 110 calories per ounce. It is wholly soluble and contains no cellulose, protein or fat. Some time between the second and the third month I like to substitute barley water for the plain water I use until this time. Barley has a caloric value of about 117 to the ounce. It is more convenient to use Robinson's prepared barley flour, because this does not require the long time to prepare that does the ordinary flour. The water is brought to a boil and the flour is added and boiled for ten minutes. It is then strained through cheese cloth or gauze and is ready for use. I commence usually by adding one teaspoonful to a pint of water, and by increasing gradually the baby gets one-half to one ounce of barley to the pint, and this constitutes barley gruel. Barley gruel is in order about the ninth month.

I quote from Grulee some examples which he gives in his book on Infant Feeding and which will demonstrate the practicability of the foregoing remarks.

Baby A, six months old, weighing 14 pounds. Stomach capacity at six months of age is six ounces, therefore give seven ounces at a feeding. Five feedings of seven ounces each equal 35 ounces. One and one-half ounces of milk to the pound weight are 21 ounces. Malted food, one ounce, added.

Final Formula.—Milk (whole) 21 ounces—441 calories.
Water 14 ounces.
Malt food 1 ounce —120 calories.

Five feedings of seven ounces each, 561 calories, 40 calories per pound.

Baby B, three months old, weighing 11 pounds. Stomach capacity at three months is 4½ ounces. Therefore give five ounces at each feeding. Five feedings of 5 ounces each equal 25 ounces; 1½ ounces to the pound weight are 16½ ounces. Malted food, one ounce, added.

Final formula.—Milk, 16½ ounces—346 calories.
Water, 8½ ounces.
Malt food, 1 ounce —120 calories.

466 calories, 42 calories to the pound.

Baby X, seven days old, weight 8 pounds:
Milk, 9 ounces.
Water, 9 ounces.

Six feedings of three ounces each.

Baby Y, 14 days old, weight 8 pounds:
Milk, 9 ounces.
Water, 9 ounces.
Malt food, ¼ ounce.

Six feedings, each 3 ounces.

Baby Z, two months old, weight 10 pounds:
Milk, 12 ounces.
Water, 10½ ounces.
Malt food, ¾ to 1 ounce.

Five feedings of 4½ ounces.

It will be noticed that the formula for the infant under two months of age differs from that of the older infant and that our ideas concerning 1½ ounces to the pound weight seem to have been mislaid. This is due to the fact that the extremely young infant has a very low tolerance for all food other than mother's milk, and our object is to tide the infant over without too great a tax on his digestive organs until such a time that he can take care of enough food for normal growth. It is hard to judge of the effect of a given food at this time, because it may take weeks to demonstrate itself. While some infants will thrive with no apparent ill effect on an ample diet, it behooves us to be conservative at this time.

During the first 24 hours the infant should receive only water, one to two ounces every four hours, to which saccharin may be added (never sugar) if diplomacy seems to demand it.

During the remainder of the first week the food is given every four hours, night and day, three ounces at a feeding and water between feedings. Malt sugar may be commenced at the end

of the second week, beginning with a small amount and gradually and guardedly increasing.

Some time in the second month the amount of each feeding should be increased to four ounces and the night feedings discontinued, giving a single feeding at 12 o'clock. The convenient times to feed are 6 and 10 A. M. and 2 and 6 P. M. and 12 midnight. When the infant is five months old the midnight feeding is stopped and one at 10 P. M. is substituted. At the tenth month the feedings are reduced to four a day and no food is allowed after 6 P. M.

The normal gain in weight for an infant fed according to this method should be from six to eight ounces a week until the sixth month, after this, from two to three ounces; so that at the end of the first year the gain is about a pound a month or twelve pounds since birth. Any marked increase over these figures, no matter how gratifying it may be to the mother, should be looked upon with concern by the medical attendant, according to Grulee, because he claims that if the digestive function is forced in the first year the child will suffer later.

There is no one formula which will agree with every infant of a given age and there is no one method of feeding which will give uniform results in every case. The ideas brought out in this paper are a mere skeleton upon which we can apply the theory with variations; but the simplicity of it and the ease with which the mother understands our directions and the facility with which we can increase or reduce the different food elements when occasion demands, appeal to me and make me believe that it is the most practical method that I have observed. I have used it in my practice during the past two years and, while I do not confine myself to pediatrics, I have fed enough babies according to the method to convince me of its value.

In the preparation of this paper I have consulted and quoted Holt, Grulee, Chapin and Pezak.

Dr. Roy said that Dr. Gannon's excellent paper was timely, practical and scientific. It presented a method of milk modification that anyone can take home and satisfactorily use. Many foolish statements are made in medical books as to the quantity of milk a baby's stomach will hold. Grulee, quoted by Dr. Gannon, is a specially practical author, and he wisely counsels stronger milk mixtures for normal infants. A normal infant one month old can very well handle half and half milk mixtures. No human being can give directions in advance for feeding sick babies; but those contained in the paper are excellent directions for feeding normal babies.

Dr. A. F. A. King had never listened to a better paper. Dr. Gannon had enlisted his sympathy with his introductory remarks,

especially upon the unintelligible statements and formulas to be found in the text-books under the head of milk modification. Dr. King had read in the *Medical Record* for May a very interesting article which advocated the feeding of undiluted milk to infants and advanced very cogent reasons to support the plea. It was curious how the various malt products have always entered into the composition of the most successful infant foods; now malt is derived from barley, and in his own experience Robinson's prepared barley had been one of the most useful agents for modifying infants' food. Dr. King had recently come across a copy of Bradford's Railway Guide for the year 1846, which contained an advertisement of Robinson's Barley. So it would seem that this preparation has been in use all this time. Patent foods may come and go, but Robinson's Barley goes on forever. What is it in barley that makes it such a good food? Is it the diastase or some other ingredient? As to the times for feeding infants: the paper at first spoke of one night feeding, but this advice was afterwards modified by abandoning this feeding after a few weeks. He himself had always condemned night feeding as unnecessary and harmful and he had never seen any reason to alter his position.

Dr. Frank Leech was much interested in the paper as he had been interested in Grulee's book upon the same subject. A few points might be more fully considered, such as the question of raw milk *versus* cooked milk. He himself had reached the conclusion that it was impossible to get good raw milk in cities during hot weather and that it was better then to use pasteurized milk. While a few cases of nutritional disturbances do follow the use of heated milk, still these are not to be compared to the infectious troubles which follow the use of bad raw milk. As to whole milk feeding, this practice is not new to Grulee or to Gannon; whole milk mixtures were used by Holt ten years ago. The low proteid percentage has long been in vogue until lately; we now know that infants may take quite high proteid percentages and do well. He had been interested in the question of infant feeding in Panama and had made inquiries about it when on a recent visit to the Canal Zone. The mothers are not usually able to nurse their babies satisfactorily, cattle do not thrive on the Isthmus, and a supply of fresh milk is out of the question. They have at last settled upon a mixture of unsweetened condensed milk with the ordinary sweetened kind as the best artificial infant food. The results are remarkably good. He thought the formulas given by Dr. Gannon were very satisfactory for preparing whole milk mixtures. For the first few weeks of an infant's life one needs to feel one's way pretty carefully until that particular infant's capacity for food is learned. He would hesitate to use half and half mixtures in the first week.

Dr. Acker had listened to the paper with pleasure. We should have such a paper from time to time; so many of us know so little about the matter. We could certainly simplify infant feeding very much if whole milk mixtures were universally applicable; and in a few cases we may succeed admirably with such mixtures, but in very many more cases reduced milk will still be necessary for success. There can be no hard and fast rule as to the sugar to be employed; experience will show that the form of sugar will have to vary in different cases, now using lactose, now maltose, and sometimes cane sugar. The formulas proposed by Dr. Gannon contained no lime water; Dr. Acker's own experience led him to continue its use, believing that it does have a good effect in increasing the digestibility of the curd. As to the hours of feeding, he always demands a three-hour interval, and where there is any digestive disturbance the interval is increased to four hours. He believes in at least 2 per cent. proteid content for the food and has frequently succeeded in giving 3 per cent. at the age of two or three months.

Dr. Randolph was glad to hear authoritative confirmation of his own practice; he had always regarded the text-book tables of milk mixtures as quite impracticable, and had therefore never attempted to use anything other than whole milk mixtures. Through the whole paper there ran a thought which may be thus formulated: The average baby is a healthy animal and will remain healthy until made sick. Dr. Randolph had always insisted on the three-hour interval and on not feeding at night. If not interfered with, the feeding intervals will be fixed by the child very satisfactorily. The ideal method of feeding a child is with mother's milk, and this is made impossible very often by too frequent feeding and by great disturbance at night as well as by day.

Dr. Foote could only echo the sentiments of the more experienced gentlemen who had preceded him. For many years Abraham Jacobi was a voice crying in the wilderness of top milk mixtures; he long ago advocated the use of whole milk as also the use of cane and malt sugars. The calorie content of infant food may be easily got at by remembering that one ounce of milk contains about thirty calories; it is necessary, therefore, to supply about one and a half ounces of milk for each pound weight for twenty-four hours, with about one ounce of sugar. The "exchange experiment" of Myer of Breslau has shown the necessity of not having more than 50 per cent. whey or milk in mixtures for children under three or four months old, hence the milk should accordingly be diluted. Whole milk mixtures need not be limited to normal children; such mixtures and also skimmed milk may often be used to advantage with sick children. Too frequent feeding will surely cause the so-called six-weeks' colic; but it

must be remembered that too long intervals may prove a handicap in cases where the supply of breast milk tends to fail.

Dr. Prentiss Willson wished to suggest that the tendency to divorce obstetrics and pediatrics goes too far; it is the duty of the obstetrician to keep in mind the welfare of the child as well as that of the mother, and on the other hand the work of the pediatrist might often be much simplified if, in the guise of the obstetrician, he had had the opportunity to supervise the antenatal life of the children who fall to his care. The four-hour interval of feeding may prove deleterious, as was pointed out by Dr. Foote; some breasts need the stimulus of more frequent nursing, not the longer rest intervals, as had been rather taken for granted in the discussion; not all cases act alike.

Dr. Isabel Haslup Lamb said that much had been said of the milk; Dr. Prentiss Willson had spoken for the mother; she wished to speak a word for the babies. After the long morning naps babies can take and need at least an additional ounce of food; moreover the long morning nap breaks up the feeding intervals, and thus it may be seen that hard and fast lines for feeding, both as to time and as to quantity, are not practicable. Too exact rules are apt to leave out of account the baby itself.

Dr. W. P. Carr said, in comment on the quantity of food a baby can take, that thirty years ago the country doctor in the neighborhood where he then resided had advised him for the feeding of his own children to make a mixture of one part of milk to seven of water, and to let the babies drink as much as they wanted; they always took all of a tincupful. As they grew older the proportion of milk was increased, but the tincupful was the measure of their capacity. When he first came to Washington it was the almost uniform custom to feed babies with sweetened condensed milk, and he had seen very many healthy babies reared on it. Much depends upon how babies are started and upon their heredity.

Dr. Macatee said that comment had been made upon the effect of bad air in causing discomfort to infants. He had only recently cured so-called colic in two flat-dwelling infants by the simple expedient of banishing the fathers with their cigars and of forbidding the evening bridge whist in the adjoining and communicating room.

Dr. D. Olin Leech said that the truth of the ast remarks was enforced by his experience with a case of a crying baby only a few days ago. All that was necessary to convert a crying, unhappy baby to a quiet, normal one was to send the father outside to smoke his cigar and to enforce at least a three-hour feeding interval.

Dr. Tom A. Williams inquired whether the baby resents the smell of tobacco or whether the chemistry of bad air makes it un-

comfortable. The olfactory system is the first of the special sense organs to be developed; the uncinate system is not only developed early but it is very large, little as we cultivate the use of the smell organ. So phylogenetically it would appear reasonable to suppose that disagreeable and hurtful smells would occasion evidence of discomfort in infants Observations by pediatrists must tell us which explanation is true in particular instances.

Dr. J. W. Chappell was much pleased with the presentation of the subject, especially on account of the simplicity of the methods advocated. He himself had never tried to use anything other than the simplest forms of milk modification, even through the late few years when the mastery of the intricacies of percentage feeding was necessary to mark the up-to-date man. He was glad to hear the general approval of the simpler plan. He agreed with Dr. Lamb that it is necessary to study the child. And in this connection he would inquire who first invented the two-hour feeding interval? If at the end of two hours infants ordinarily wake up, become restless, and begin to cry for food, one could understand why two hours was set for the feeding interval. But this is not the habit of normal babies. It must have originated in the mind of some fool doctor who dared to interfere with nature.

Dr. Williams said that it is conceivable that the two-hour theory arose thus: it was found that small animals lose body heat rapidly, they therefore have to take food oftener. It followed that as an infant is a small animal, it must be frequently fed. Thus everything was ripe for another physiological theory run mad.

Dr. Gannon thanked the members for the generous discussion of his paper; he had learned much for which he was grateful. His paper had been designed rather as a tip to the general practitioner than as an effort to teach the pediatrists how to feed infants.

Holes in Her Stockings.—The eternal feminine crops out in the current story of the nervous woman to whom the throat specialist, while adjusting a laryngoscope preparatory to an examination, remarked:

"Madam, you'd be surprised to hear how far down we can see with this wonderful instrument."

"Doctor, before you begin perhaps I ought to tell you that I really hadn't time to mend the holes in my stockings before I came here ."—*Boston Globe.*

In Memoriam.

DR. GEORGE HENDERSON.

Report of a Memorial Committee appointed to prepare resolutions of respect to the memory of Dr. George Henderson:

Your committee recommends the adoption of the following resolutions:*

WHEREAS it has pleased an All Wise Providence to remove from our midst a worthy and respected member, therefore be it

Resolved, That in the death of Dr. George Henderson the Medical Society of the District of Columbia has lost a highly esteemed and valuable member, the community a public spirited and energetic citizen, and his many friends an amiable and congenial companion.

Resolved, That the Society express its deepest sympathy with the bereaved family and that the Corresponding Secretary be directed to forward the relatives a copy of these resolutions.

(Signed) B. G. POOL,
L. H. REICHELDERFER,
W. MERCER SPRIGG,
Committee.

DR. POOL said: We are called upon to-night to take appropriate action concerning the death of Doctor George Henderson, which occurred November 27, 1913, at 1406 Perry street, in this city, after an illness, with cancer of the larynx, of about one year.

Besides his immediate family, he leaves a host of friends who will not forget his genial manner and will reverence the memory of a just and upright man.

He came of fighting stock. His greatgrandfather, Colonel John Haslet of Delaware, was mortally wounded while leading his regiment on the raw winter morning that Washington made his unexpected and skilful movement that led to the short but decisive battle of Princeton, January 3, 1777. Haslet was a personal friend of the great general, and it is said that when Washington heard of the death, he went to the part of the field where the body lay and wept bitter tears of sorrow.

Haslet's only son, Joseph Haslet, the grandfather of Dr. Henderson, commanded a Delaware regiment during the war of 1812 and was severely wounded in battle. He was the commander-in-chief of the Delaware militia at the bombardment of Lewes, Delaware. He was twice elected Governor of Delaware, and died during his incumbency, in 1823.

Dr. Henderson's father, after whom the Doctor was named,

*Unanimously adopted by the Medical Society at a meeting held December 17, 1913.

was in the Indian wars of the West, having moved from Philadelphia to Wisconsin during the pioneer period of that then territory; and the Doctor's only brother William fell a victim to camp fever during the civil war.

Dr. Henderson was born on a farm in Grant County, Wisconsin, in 1842, and his early years were spent like those of many other boys of that new country. His education was such as he could obtain from his older brother and by going to school in the winter at Page's Academy in his native county. After the civil war he attended the Medical Colleges of Ohio and Howard University.

At the outbreak of the civil war he enlisted in the 7th Wisconsin regiment, which was one of the regiments of the famous "Iron Brigade." At the second battle of Bull Run, although then a mere boy, though a veteran sergeant in the grim school of war, he took an active part. To form an idea of some of the scenes through which he passed at that time, it would be well to read the account given by Captain L. C. Duncan, of the Medical Corps of the Army, in the *Military Surgeon* for December, 1912. (At this point Dr. Pool read extracts from Duncan's paper.)

It was on the 29th of August, 1862, when darkness had veiled the scene of the day's carnage, that Henderson crept out upon the field where friend and foe, the living and the dead, lay in groups under the silent stars, in search of a comrade who had fallen beside him during the day. Here his woodcraft served him in good stead, for he found his friend with a shattered leg lying where he had fallen. Henderson took the wounded man upon his back and essayed to make his way within the federal lines, when challenged by a sentinel, he lay down in the water of a run, with his helpless burden, until the listening guard must have supposed that he heard only the rippling of the water. This is the kind of friend that Henderson was.

Fifteen days afterwards, September 14, 1862, near the close of the day's fighting at South Mountain, he was shot. A minie ball entered his mouth, fractured the lower maxilla, and passed out behind in the mastoid region. He was left for dead on the field and lay there probably for more than twenty-four hours. He was then discovered by a young surgeon who tied his external carotid artery by flickering lantern light, and passed on to be himself killed in battle a short time afterwards. But the surgeon had made an entry in his note book. On searching the record we find that there were only eight cases reported for the war, of ligation of the external carotid artery, and of these three died and five survived.

No more kind, gentle and lovable man ever lived. Those of us who knew him as a true sportsman will not soon forget the enthusiasm, the skill, and the tirelessness with which he followed a

trail. For over half a century there was hardly a season passed but he went for big game. Amid rain and snow and darkness on the wild mountain side, far from camp at the close of a long day's tramp, he was cheerful and confident; and when the bivouac was reached he was never too tired to work for the comfort and pleasure of those who were fortunate enough to be with him. He was a good story teller, and did the time permit, many interesting and amusing anecdotes might be related that he told while we gathered around the campfire.

He also wrote many accounts of hunting and camping experiences which are well worth reading.

He held many positions with credit to himself and profit to the community. Among others he was Surgeon to the C. and O. Railroad; was Police Surgeon in this city for several years, appointed October 1, 1889; was Surgeon General of the District of Columbia from December 22, 1890, to July, 1909. He was a member of the Association of Military Surgeons and was Chairman of the Committee of Arrangements of the Eleventh Annual Meeting of that body in this city in June, 1902.

He was twice married. His first wife, by whom he had one son, died. His second wife was Miss Mary Eels. She, with two daughters and several grandchildren, survive him.

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PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Wednesday, November 5, 1913.—The President, Dr. W. P. Carr, presided; about 100 members present.

The Treasurer's report for October, showed receipts $656.00; disbursements, $247.82.

Dr. G. Wythe Cook, the delegate to the American Medical Association, reported that he had attended the meeting of the Association in Minneapolis, and, according to instructions, invited the Association to meet in Washington in 1914, but the Association decided to meet elsewhere. He had also, according to instructions, offered for adoption the amendment in regard to membership of physicians removing from one State to another, but it was not adopted; however, a substitute was adopted which partly relieved the situation.

Dr. Cook, also from the Executive Committee of the Society, reported the following recommendations, which were adopted:

1. That the Medical Society is in favor of throwing safeguards around the indiscriminate sale of bichloride of mercury tablets, either by restricting the sale, or by giving them a distinctive color,

or both, each tablet to contain not more than two grains of the drug.

2. That members in arrears for dues beyond the constitutional limit and have been properly notified thereof, be dropped from the rolls of the Society.

3. That the dues of the following members be remitted to date: Drs. S. W. Bogan, H. M. Deeble, C. V. Petteys, H. M. Price, J. N. Reeve and W. C. Williams.

4. To amend Article V, Section 10, of the Constitution, as follows: For "two years," substitute the words "one year."

Dr. Balloch, from the Committee of Censors, reported favorably on the following candidates for membership and they were elected:

To active membership, Sacks Bricker, G. W. Univ., 1912; Caryl Burbank, Georgetown Univ., 1903; Daniel Witter Higgins, G. W. Univ., 1908; Wm. Henry Huntington, same, 1906; Joseph J. McCarthy, Georgetown, 1911; Jesse Irving Sloat, G. W. Univ., 1912, and Richard Lee Spire, same, 1906.

To associate membership, Carl Lucas Alsberg, Chief of Bureau of Chemistry, Dept. of Agriculture, and Dr. Max Kahn, of same Bureau.

An appropriation of $60.31 was made for the expenses of the Corresponding Secretary for October.

The following applications for membership were received and referred:

Scott Dudley Breckinridge, Georgetown Univ., 1907; Edith Seville Coale, Woman's Medical College, Baltimore, 1908; Wm. Thornwall Davis, G. W. Univ., 1901; Richard Laurens DeSaussure, same, 1913; Frank Edward Duehring, Georgetown, 1912; Wm. S. Hardesty, G. W. Univ., 1906; Wm. Francis Patten, same, 1904; John Hunter Selby, Univ. Penna., 1907, and Wm. Pleasant Wood, G. W. Univ., 1909.

For associate membership: George D. Fadeley, Falls Church, Va., Henry C. Fisher, U. S. Army, Elliot Coues Prentiss, El Paso, Tex., and Carl Voegtlin, Hygienic Laboratory, Washington.

The death of Dr. Thomas Francis Smith was announced.

The following amendment to the By-Laws recommended by by the Executive Committee May 28, was formally proposed: Article 8, Section 9, "No member of the Staff of any hospital receiving patients in private rooms, shall attend a patient sent to that hospital by a member of the Society, not a member of the Staff, unless specifically asked to do so by the attending physican."

The following members were dropped from the roll: Drs. J. Lee Adams, B. M. Beall, N. D. Brecht, H. J. Bryson, G. H. Camp, H. C. Cook, E. F. Cummiskey, R. F. Danforth, J. H. DeMerritt, R. R. Farquhar, R. C. Heflebower, J. P. Hilton, J. H. Holland, E. C. Hunter, G. F. Johnston, C. P. Knight, Morris Korshet, T. A. Lee, R. J. McAdory, Francis McQuillon, B. F. Madison, J. W.

Marshall, A. C. Merriam, J. H. Neall, W. E. Philes, G. S. Saffold, J. A. Smith, J. H. Stone, H. I. Stout, T. J. Sullivan, W. G. Suter, J. C. Tappan, P. R. Terry, L. A. Walker and J. H. Dulaney.

Dr. W. H. Atkinson presented a patient with *Congenital Malformation* of the *jaws*.

Dr. Groover said that the radiograph of the case gave some information but not all that could be desired. It could be seen that there was no bony fusion between the upper and lower jaws and that teeth were present in the jaws and seemed to be normal. No information could be obtained as to the condition of the tempero-maxillary articulation.

Dr. Shands had no definite opinion to advance, except that there was unquestionably an absence of motion of the lower jaw, and he inclined to the belief that the deformity was due to congenital absence of the joint. He called attention to a case he had operated upon a number of years ago in which there was congenital absence of both elbow-joints. (He showed skiagraphs of the case to indicate the results of the operation.) He had done excision of the fused bones at the normal site of the joint; while some motion was attained, the result was not comparable to what one would expect today with the present technic.

Dr. D. S. Lamb said that the case seemed exceedingly rare; works on teratology make no mention at all of the abnormality, though from a developmental standpoint such an abnormality might be expected as a possibility. A peculiarity of the case was the lack of development of the lower jaw.

Dr. Jack said that the chief point of interest in the case was how to treat it. It seemed to him that the condition was about the same as in those cases of acquired fusion of the temporo-maxillary joint from arthritis and from infections of the gum. Very good results are had in such cases from slitting the gum and by an internal operation refashioning the joint, turning in a flap. He could see no reason why good motion could not be got in this way in Dr. Atkinson's case.

Dr. Macatee suggested that fusion of the gums at least would undergo spontaneous cure if given time enough; the skiagraph showed that the teeth were normally placed in the jaws, and as the lower teeth grow up and the upper teeth grow down, the gums would be slit naturally in time.

Dr. Atkinson welcomed the suggestion made by Dr. Jack, although the fact that the child was so very young made a difference as between her case and those cases of acquired ankylosis in older persons. Dr. Atkinson himself was of the opinion that there were present the proper joint structures but that the jaw was immovable from lack of use. He hoped that something might yet be done; certainly the child herself had distinctly enlarged the cleft between the gums by incessantly protruding the tongue

as far as possible. Could not some way be found to separate the gums by applying constant pressure?

Dr. W. P. Carr said that it was an easy matter to produce absorption of bone by pressure, but not in scar tissue nor in the gums. He would hardly expect improvement by gradual methods; if operative intervention was to be undertaken, the earlier the better.

Dr. W. D. Webb read the paper of the evening, entitled "A Study of nineteen Cases of Abscess of the Liver," illustrated by stereopticon slides and by specimens from the Army Medical Museum shown by Dr. D. S. Lamb. Discussed by Drs. Vedder, U. S. A., Vaughan, Borden, W. P. Carr, Abbe and Webb. See page 27.

Wednesday, November 12.—Vice President, Dr. E. L. Morgan presided; about 150 members present. Dr. S. Harnsberger, President of the Medical Society of Virginia, sat with Dr. Morgan.

Professor Adolph Schmidt, of Halle, Germany, addressed the Society on Hyperacidity of the Stomach.

A vote of thanks was given Dr. Schmidt, and later a reception at the Cosmos Club by the members of the Society.

Wednesday, November 19.—Vice President, Dr. J. W. Chappell, presided; about 90 members present.

Letters from Mrs. F. X. Dooley and Mrs. Monte Griffith were read, in acknowledgment of the action of the Society in memory of their respective husbands.

It was ordered that 500 reprints of the memorial and addresses in the case of Dr. T. C. Smith should be printed.

Dr. T. A. Williams presented a patient showing symptoms of *Intracranial injury at birth with recent epileptiform seizures.*

The patient was an Italian woman of 23 years. In February, 1912, she began to have epileptiform seizures of a mild type; the diagnosis of epilepsy was made by the family doctor in conformity with the obvious symptoms, and she was treated in the usual reprehensible manner with bromides. Even idiopathic epilepsy, so-called, must have a cause, and in seeking a cause in this case, it was to be observed that the patient was markedly asymmetrical in development of the two sides; it follows that there had been some profoundly serious and persistent interference with the nutrition of one side of her body, and hence one was led to the conclusion that there was present a definite lesion of the cerebrum. The asymmetrical development in this case was not noticed until the patient was seven years old; but in the absence of any other known cause, the presumption was that the lesion was due to a birth palsy which was not noticed until the period of active

growth was reached. There was possibly a hematoma of the dura mater causing the young woman's symptoms.

Dr. Vaughan said that Dr. Williams' case was clearly one of cerebral injury received at birth or soon afterward. What the nature of the lesion was was uncertain. Dr. Vaughan was inclined to agree with Dr. Williams' presumption, that it was the remains of an old hemorrhage.

Dr. A. B. Hooe said that the case resembled those who were injured by the cranial compression of prolonged labor or by forceps extraction. He was convinced that very many of the so-called congenital brain lesions of infants were in fact received or inflicted at birth. It was clear, in view of the large number of such cases, that pregnant women should receive watchful care throughout gestation, with careful measurement of the pelvis, to the end that cases of contracted pelvis might be recognized early and premature labor induced or Caesarean section performed.

Dr. W. H. Hough merely wished to bring to mind the fact that many other congenital causes exist which might account for the lesions in this case, despite the presumption that the condition was due to a birth injury.

Dr. Williams wished to add two remarks. The first was theoretical; How shall one account for the marked trophic changes in this case when it is believed that trophic control is presided over by the spinal cord? Were they due to vasomotor influences or to lack of use growing out of the palsy? Probably the latter in great part.

The second remark was practical and to the effect that difficult labors will continue to occur in spite of the obstetricians and of all the care they may exercise to prevent them. When in such cases the obvious lesions of parturition have settled down, there should be a careful neurological survey of these children to determine whether any permanent defect of the nervous system remained.

Dr. G. T. Vaughan presented a recent specimen of the right lobe of the thyroid gland removed for *Exophthalmic Goiter*.

The specimen was about twice the size of the normal right lobe. It was removed by excision, not enucleation. The parathyroids were left behind as far as could be determined. The case was one of typical exophthalmic goiter of about two years duration. The histology of the specimen would probably prove to be typical of this disease.

Dr. A. B. Hooe briefly reported two cases of obscure exophthalmic goiter in which the outstanding symptoms were of abdominal distress.

Dr. Lawn Thompson inquired what Dr. Vaughan thought of these cases from a medical standpoint, especially as to the probability of recurrence of symptoms. He made the inquiry because he had now under observation two patients with troublesome

symptoms of hyperthyroidism, one of whom had had a portion of the thyroid removed at the Mayo clinic and the other had had the same operation done in Baltimore. In view of the experience with these patients he had come to feel very uncertain as to the advisability of subjecting these patients to the serious risks of surgical treatment.

Dr. Williams said that Basedow's disease was quite amenable to medical treatment in many cases, and surgical intervention should not be invoked until reasonable efforts have been made by medical means to relieve the symptoms remembering the great influence of the psyche upon thyroid secretion. An exploration of the mental life should be undertaken with a view to appropriate psychotherapy. One should keep in mind the chemical aspects of the causes of hyperthyroidism and should attempt to prevent the toxic factors that may cause it.

Dr. A. F. A. King said that the effect of the menopause upon the spontaneous improvement of exophthalmic goiter should always receive consideration. He cited a case of his own in which the completion of the climacteric was followed by complete disappearance of the hyperthyroidism.

Dr. Roy wished to emphasize the remarks made by Dr. Williams upon the value of the proper medical regime in these cases; physicians should be extremely careful about turning these patients over to the surgeons. It should be borne in mind that hyperthyroidism is probably an effort of nature to overcome some toxemia. Moreover it should be remembered that hypothyroidism and hyperthyroidism might be mixed in the same case, now one set of symptoms being in ascendancy and now the other, and that harm might be done by removing the gland in such cases.

Dr. Fremont-Smith said this very important subject was ill-defined and badly classified; authorities still hopelessly differed in their opinions, in spite of the great mass of new knowledge concerning the disease. It was not always necessary to wait for the menopause to effect a spontaneous subsidence of the disease; he had seen many such cases of complete spontaneous cure in young men under thirty.

Dr. Vaughan, in closing the discussion, said that decided differences of opinion evidently existed between the medical men and the surgeons on this subject. It might be remarked, however, that by no means are all the deaths from this disease to be chargeable to the surgeons.

Recurrences do happen after removal of part of the gland; what the percentage of such recurrences was had not yet been ascertained. Moreover, there were some glands which should not be removed. Surgeons realized that in these cases there was some error of metabolism, either too much secretion or some other obscure defect of function. Whatever the cause, the fact remained that Kocher and the Mayo's were able to cure from 85 per cent.

to 90 per cent. of these cases, and many other surgeons did as well. His last remark did not apply to every man who essayed to do surgical operations.

One could not afford to wait for the climacteric to effect a cure in this disease; patients sometimes died in acute exacerbations of the disease. He had seen such a case only two years ago; the patient died without the surgeon having operated. In this case the fatal result was possibly due to the delay in accepting the proferred surgical relief, while the patient waited for a more convenient season.

Dr. C. A. Pfender read the paper of the evening: X-ray Diagnosis in Incipient and more Advanced Stages of Pulmonary Tuberculosis. Illustrated by radiographs and stereopticon slides of 23 cases. Dr. D. S. Lamb also showed specimens of pulmonary tuberculosis from the Army Medical Museum. Discussed by Drs. Ramsburg, Christie, Groover and Pfender. See p. 14.

Wednesday, November 26.—The President, Dr. Carr, presided; about 60 members present.

Dr. T. A. Williams presented a patient with *delayed occupation neuritis.*

The patient was a carpenter, white, aged 40. He was referred by Dr. Heineke to Dr. Williams on account of vertigo and pain of one month's standing in the fingers and palms. Examination showed that the hands were very tender from about the middle of the palms to the finger tips, not above. There was no tenderness elsewhere, therefore no multiple neuritis. The character of the pain suggested that it was cutaneous neuritic; a firm grasp of the hand was not painful, but slight stroking produced excruciating pain. The degree of tenderness precluded complete examination of the sensory functions. Pressure neuritis as an explanation of the trouble was excluded because the patient had not used his tools for two years. Examination of the reflexes showed that those of the lower limbs were unequal; the right knee jerk was feeble, the left Achilles jerk was feeble. History revealed the fact that there had been an iritis ten years ago; the pupil was now widely dilated and fixed; the other pupil did not react to light at all; not the true Argyll-Robertson pupil; cerebro-spinal involvement is shown by dissociated reflexes, and there is a lymphocytosis in the spinal fluid.

But how account for the finger tenderness? Tabetic radiculitis was not tender. Why any neuritis at all? Anemia would not account for it, because local peripheral anemia would cause neuritis in the feet also. He ventured to explain the production of the symptoms thus: The patient was a carpenter and probably had hypertrophied palmar fasciae; he was also a victim of syphilis. In the palmar fasciae, endarteritis had appeared, with slow granulomatous changes, which had resulted in pinching the

palmar nerves and thus set up neuritis. He would be glad to have the opinion of others upon the case.

Dr. Randolph inquired if the distribution of the painful area was symmetrical.

Dr. Williams replied that the tenderness was bilateral but not exactly symmetrical. The hyperaesthetic area extended further up the palm on one side than on the other. The intensity of the pain was equal on the two sides.

Dr. J. A. Gannon read the paper of the evening, Whole Milk Modification in Feeding Normal Infants. Discussed by Drs. Roy, A. F. A. King, Frank Leech, Acker, Randolph, Foote, Prentiss Willson, I. H. Lamb, W. P. Carr, Macatee, D. O. Leech, T. A. Williams, Chappell and Gannon. See page 38.

Wednesday, December 3.—The President, Dr. Carr, presided; about 140 members present.

The Treasurer reported for November: Receipts, $199.00; disbursements, $65.88.

The resignations of Drs. P. E. McDonald and Eva C. Reid from active membership were accepted.

An appropriation of $29.13 was granted to the Corresponding Secretary for printing. Also $177.81 for publishing the November ANNALS and $14.75 for reprints of the T. C. Smith memorial, to the Committee on Publication. The reprints were placed in the hands of the Recording Secretary for distribution and 50 copies ordered to be sent to Dr. H. M. Smith.

The Corresponding Secretary stated that Dr. A. Hrdlicka of the National Museum would address the Society on the Prehistoric Pathology of the American Continent, the address being based on a large collection of specimens. In view of the impossibility of removing these specimens from the Museum to the Society room, the address would have to be made at the Museum Assembly room. The Program Committee was directed to arrange for the address, the expense not to exceed $20.

The following officers were elected for the year 1914:

President, J. R. Wellington; First Vice President, R. A. Holden; Second Vice President, E. Y. Davidson; Recording Secretary, H. C. Macatee; Corresponding Secretary, A. L. Hunt; Treasurer, C. W. Franzoni; Delegate to the American Medical Association, G. Wythe Cook; Alternate, P. S. Roy. Members of Executive Committee: To serve three years, J. Van Renssalaer, J. S. Wall and W. P. Carr; two years, F. R. Hagner, vice A. L. Hunt, elected Corresponding Secretary; one year, D. O. Leech, vice J. D. Thomas, resigned.

The death of Dr. George Henderson was announced and Drs. Reichelderfer, Sprigg and Pool were appointed a committee on resolutions. Drs. Tewksbury, Hunt and Lawn Thompson were appointed a similar committee in memory of Dr. T. F. Smith.

Wednesday, December 10.—The President, Dr. Carr, presided a short time; afterwards Dr. Chappell, Vice President. The meeting was held in the Assembly room at the National Museum. Dr. Ales Hrdlicka addressed the Society on Prehistoric American Pathology. A large collection of specimens was presented.

Wednesday, December 17.—The President, Dr. Carr, presided; about 120 members present.

Dr. J. R. Wellington was elected to represent the Society as one of the Vice Presidents of the Washington Academy of Sciences.

The Treasurer was authorized to pay bills properly approved, until the next meeting of the Society.

Dr. C. C. Ammerman having been appointed an Acting Assistant Surgeon in the Navy, was continued as an active member of the Society.

The following appropriations were made: For use of auditorium at National Museum, $6; printing for Corresponding Secretary, $29.68.

A vote of thanks was given Dr. Hrdlicka for his address on the 10th instant.

Dr. Pool, for the committee, reported resolutions of respect for Dr. George Henderson. See page 48.

Dr. S. S. Adams offered the following resolution, which was adopted:

WHEREAS, The present Surgeon General of the Navy, Dr. Chas. F. Stokes, has in our opinion not only placed the Medical Corps of the Navy upon a more efficient basis and higher scientific plane than it ever occupied before, but by his official actions has enforced marked sanitary improvements in certain seaport cities and has added much to the general welfare of the whole country by his example and teaching, set forth in numerous addresses before the leading medical and hygienic bodies of the country, and has rendered valuable aid to the whole medical profession by giving to it most valuable statistics, the result of his own methods and reorganization, therefore be it

Resolved, That this Society heartily endorses the methods and policies which enabled Admiral Stokes to bring about these brilliant and useful results, and extends to him the most hearty congratulations and good wishes and hopes for his continuation in the work he has so well begun.

[The following acknowledgment was received from Admiral Stokes:

WASHINGTON, D. C.,
December 24, 1913.

GENTLEMEN:

I am deeply touched by the resolutions adopted by the Medical Society of the District of Columbia at a meeting held December 17, 1913, a copy of which has just reached me.

To feel that what little I have been able to accomplish during my term as Surgeon General of the Navy has, at least, met with the approval of so distinguished a body of my colleagues close at hand, is ample reward for all the efforts that have been made and the battles fought; first, for the efficiency of the Navy as a whole; next, for the humanitarian features of this great military establishment, and for scientific medicine and surgery as well.

With profound sentiments of appreciation, I am,

Very respectfully,

(Signed) C. F. STOKES.

The President, Officers and Members of the Medical Society of the District of Columbia.]

The Program Committee was instructed to invite Dr. E. R. Stitt, U. S. Navy, to address the Society on Tropical Diseases.

The President then delivered his annual address: The Dawn of a New Era in Surgery. See page 1.

A vote of thanks was given to Dr. Carr for his address and for the impartial and acceptable manner in which he had presided during the year.

The Society then adjourned for the session of 1913.

WASHINGTON MEDICAL ANNALS.

Journal of the Medical Society of the District of Columbia.

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Editorial.

HISTORY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

THE WASHINGTON MEDICAL ANNALS, the official organ of the Medical Society of the District of Columbia, issued the first

of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

THE ALUMNI MEDICAL SOCIETY OF GEORGETOWN UNIVERSITY has an active membership of 110 members and meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

CLINICAL SOCIETY OF WASHINGTON.—Composed of 25 active members besides retired members. Officers: C. M. Hammett, President; T. A. Groover, Vice President; W. E. Clark, Secretary-Treasurer; L. A. Johnson and J. D. Thomas, Censors.

CLINICO-PATHOLOGICAL SOCIETY.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership for 15 years. A limited honorary membership of distinguished medical men. Meets on first and third Tuesdays from October to May, inclusive. Officers: W. G. Morgan, President; Sothoron Key and E. E. Morse, Vice Presidents; B. M. Randolph, Secretary and Treasurer.

THE FREEDMEN'S HOSPITAL MEDICAL SOCIETY meets on the third Tuesday of each month from October to May, inclusive. Its membership is composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. The present officers are E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

THE GALEN SOCIETY OF THE DISTRICT OF COLUMBIA.—Schedule of meetings, session of 1913–14:

1914.	*Place.*	*Essayist.*
Jan. 19	Dr. Tewksbury, 4200 Georgia Avenue	Dr. Biggs.
Feb. 16	Dr. Seibert, 1817 Nineteenth Street	Dr. Reichelderfer.
Mar. 16	Dr. Borden, 1801 California Avenue	Dr. Titus.
Apr. 20	Dr. Taylor, The Cecil	Dr. Stuart.
May 18	Dr. Stuart, Army and Navy Club	Dr. Bogan.
Oct. 19	Dr. Kearney, 1229 O Street	Business Meeting. President's Address.

David W. Tastet, President; Carl Henning, Secretary.

GEORGETOWN CLINICAL SOCIETY; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

THE HIPPOCRATES SOCIETY, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year are L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

MEDICAL HISTORY CLUB of Washington, D. C., 1913–1914. Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H. W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig. Meetings:

1914.	*Essayist.*	*Host.*
Jan. 31...	"Gynecological Progress"	Dr. Cook, 3 Thomas Circle
	"Early Gynecology", Dr. Miller "Sims and his Work," Dr. Lawson "Emmet and Later Gynecologists," Dr. Hume	Essays limited to 20 minutes
Feb. 28..	"History of Urinalysis," Dr. Mallory	Dr. Nichols 1321 Rhode Island Ave.
Mar. 28..	"History of the Laryngoscope," Dr. Bryan	Dr. Baker 1901 Biltmore St.
April 29..	"Moon Myths in Medicine," Dr. White	D. C. Medical Society 1325 H St., N. W.

MEDICAL AND SURGICAL SOCIETY of the District of Columbia.—President, H. P. Parker; Vice President, D. P. Hickling; Secretary and Treasurer, L. Eliot; Recording Secretary, L. C. Ecker; Executive Council, A. R. Shands, O. A. M. McKimmie, L. Eliot, E. P. Copeland and L. H. Reichelderfer.

SOCIETY OF OPHTHALMOLOGISTS AND OTOLOGISTS, WASHINGTON, D. C., 1913–1914.—Officers: President, J. J. Richardson; Vice President, L. S. Greene; Secy.-Treas., A. B. Bennett, Jr.

Membership.—Active Members: Drs. A. B. Bennett, Jr., J. H. Bryan, W. K. Butler, John W. Burke, Virginius Dabney, H. S. Dye, L. S. Greene, F. M. Chisolm, Carl Henning, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. P. Malone, W. B. Mason, M. E. Miller, S. B. Muncaster, Mead Moore, W. S. Newell, H. A. Polkinhorn, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive Members: Drs. W. N. Souter, C. W. Richardson, D. K. Shute, W. H. Wilmer, Wm. H. Fox.

Meetings are held on the third Friday in each month from October to May, inclusive.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

The Walter Reed Medical Society meets on the fourth Thursday of every other month, from September to May inclusive. It is composed of physicians located in the eastern part of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

The Washington Society of Nervous and Mental Diseases has inaugurated its seventh session by re-electing last year's officers as follows: President, Dr. Tom. A. Williams; Vice President, Dr. W. M. Barton; Secretary, Dr. W. H. Hough. The Society has a limited membership but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. It meets monthly on the third Thursday at the Cosmos Club or a member's residence.

The Women's Medical Society of the District of Columbia meets the first Tuesday of each month from October to May, inclusive. Officers: President, Sophie Nordhoff-Jung; Vice President, Ada R. Thomas; Recording Secretary and Treasurer, Phebe Norris; Corresponding Secretary, Elizabeth Sohon.

The Secretaries of the other Medical Societies of this District are reminded that the Annals will publish the schedules of their meetings.

Fiske Fund Prize Essay.—The prize for 1914, $200.00, is for the best essay on "The causes, symptoms and early recognition of carcinoma uteri." Papers should be forwarded to Dr. Halsey DeWolf, 212 Benefed Street, Providence, R. I., by May 1, 1914. For further information address Dr. DeWolf.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

THE 19TH INTERNATIONAL CONGRESS OF AMERICANISTS.—We have been requested to invite attention to the fact that this Congress will meet in this city October 5 to 10, 1914. The meetings will be held at the new U. S. National Museum building under the auspices of the Smithsonian Institution, coöperating with other institutions and societies in this city. Drs. Frank Baker, G. M. Kober, D. S. Lamb and J. D. Morgan are members of the Organizing Committee. Dr. Ales Hrdlicka of the National Museum is the Secretary. The membership fee is $5.00, and the Associate Membership fee $2.50, payable to the Treasurer, Clarence F. Norment, 1851 Wyoming Avenue, N. W.

THE AMERICAN COLLEGE OF SURGEONS.—The college has issued a printed statement giving the history of the organization, its object, the by-laws, names of officers, addresses delivered, and a list of the fellows by States for the United States and Dominion of Canada. The list of names from this district is as follows: Drs. Balloch, Rupert Blue, W. C. Borden, Bovée, Bryan, W. P. Carr, Dabney, W. G. Erving, Fry, Hagner, Taber Johnson, R. S. Lamb, Lawson, Lehr, E. P. Magruder, Brown Miller, Moran, Reichelderfer, C. W. Richardson, J. J. Richardson, Richey, Shands, W. F. M. Sowers, Spear, Stavely, Stokes, I. S. Stone, Ford Thompson, Torney, Vaughan, Wellington, C. S. White and Wilmer.

THE WOMAN'S CLINIC BOARD OF DIRECTORS held its annual meeting January 10 at the Clinic rooms, 1237 T Street, northwest. The Secretary's report showed that 857 patients had been treated during the year. The following officers were elected for the year 1914: Mrs. E. L. Ragan, President; Vice Presidents, Miss E. M. Gillett and Dr. L. H. Reichelderfer; Mrs. C. P. Burleigh, Recording Secretary; Dr. E. A. Reid, Corresponding Secretary; Dr. D. S. Lamb, Treasurer.

THE WOMAN'S CLINIC AUXILIARY, INCORPORATED, an organization for the conduct of an evening "Clinic," attended by women physicians, for white women and children, opened its doors at 716 13th Street, N. W., for service September 20, and gave a formal opening to the profession and the public on December 10. The ideals and methods of this Clinic are unique in many repects. The waiting room is fitted up with easy chairs, banks of plants, shelves filled with good books, and a writing desk for the "Keep Wells" as the patients are called. There are three well equipped treat-

ment rooms. All these have been furnished by special contributions. The Society now numbers 95 members. There are ten clinicians, nine assistants and twenty-four consultants on the medical staff. Mrs. John Hays Hammond is President of the Board of Directors, Mrs. Julius Lansburgh is Secretary and Dr. Elnora C. Folkmar is Superintendent of the Clinic.

At present this Clinic has five services from 5 to 7 P. M.—Surgery and Gynecology, Internal medicine, General medicine, Ear, Nose and Throat, and a Dental service. There are two afternoon services, 2 to 4 P. M., one for mothers and one for children, and there is an out-patient maternity service. The superintendent's report show that between September 20 and December 31, patients ranging in age from 3 to 71 years made 219 visits to the Clinic and that three out-patient maternity cases were attended, the physicians making over twenty-five visits to these cases.

The Clinic charges only a nominal fee which bears a direct relation to the income and expenses of the patient. A number of patients have been treated and furnished medicine free. The maximum amount charged at the Clinic has been one dollar. The average amount received per visit is thirty cents. Maximum fee for out-patient maternity service is $10. This Clinic is a boon to white women, especially wage earners. A school of hygiene and practical nursing will be organized by the Board of Directors.

REVIEWS.

Medical Research and Education; being Volume II of series on Science and Education. Edited by J. McKeen Cattell. Published by the Science Press, New York, 1913.

This volume of 536 pages consists of papers on various aspects of medical research and medical education by the following well known physicians: C. A. Bardeen, University of Wisconsin; Llewellys F. Barker, Johns Hopkins; Henry P. Bowditch, formerly of Harvard; W. B. Cannon and W. T. Councilman of Harvard; J. M. Dodson, University of Chicago; H. H. Donaldson, Wistar Institute; James Ewing, Cornell; J. B. Herrick, Rush Medical College; C. A. Herter, Columbia; W. H. Howell, Hopkins; C. M. Jackson, University of Minnesota; W. W. Keen, Jefferson Medical College; C. P. Lyon, University of Minnesota; F. P. Hall, Hopkins; S. J. Meltzer, Rockefeller Institute; C. S. Minot, Harvard; W. Ophüls, Leland Stanford University; Theobald Smith, Harvard; G. N. Stewart, Western Reserve; W. H. Welch, Hopkins.

It is not necessary to do more than name these writers; whatever comes from their pens is well worth careful reading. The

book is recommended to physicians especially, and more particularly to those engaged in medical education.—D. S. LAMB.

MORTALITY STATISTICS FOR THE YEAR 1910, Bureau of the Census; 11th annual report, folio, 611 pages. The registration area has increased and now includes 33.6 per cent. of the local area of the United States; California, Colorado, Connecticut, District of Columbia, Indiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Washington, Wisconsin and forty-three cities in other States. The States not included are Alabama, Delaware, Florida, Georgia, Illinois, Kansas, Kentucky, Louisiana, Missouri, Nevada, Oregon, South Carolina, Tennessee, Texas, Virginia and West Virginia. The registration area includes 58.3 per cent. of the population of the United States.

The number of deaths in the registration area for 1910 was 805,412; the average age including still births was 38.7. The principal causes of death were as follows: Tuberculosis, all forms, 86,309 (of the lungs, 73,214); pneumonia, 79,524; organic disease of heart, 76,178; diarrhoea and enteritis, 63,180; nephritis and Bright's disease, 53,330; cancer, 41,039; typhoid fever, 12,673; diphtheria, 11,521; influenza, 7,774; measles, 6,598; whooping cough, 6,416; scarlet fever, 6,255; infantile paralysis, 1,459; malaria, 1,167; pellagra, 368; smallpox, 202; suicide, 8,590; violent deaths including suicide, 48,606.—D. S. LAMB.

INEBRIETY, ITS SOURCE, PREVENTION AND CURE. By TOLLEN PALMER. THE UNION PRESS, Philadelphia, 8th edition, 1913.

This little book of about 100 pages is an interesting and comprehensive though non-technical exposition of the psychological aspects of inebriety, viewed from an etiological and therapeutic standpoint. There is nothing strikingly original in the ideas advanced concerning the cause and treatment of alcoholism, nor is its exposition sufficiently specific to be of much service to the medical practitioner. The chief use of this book will be as a sort of inspiration and guide to those alcoholics who happen to retain enough intelligence to comprehend, and will power to assimilate the precepts.

The first chapters are devoted to a plain description of the nervous mental organization that constitutes the inherited or acquired neuro-psychopathic constitution or inebriate diathesis, upon which so many cases of alcoholism depend. The second part deals with the first steps towards cure, the moral status of the inebriate, the necessity of training the will power and the gradual

building up of self control. He believes that confinement in a private sanitarium at the beginning of treatment may be necessary, but the period should not be longer than three months. The third part deals with the remedying of the pre-inebriate morbid conditions in youth which lead to or predispose to inebriety. This chapter, inasmuch as it deals with moral prophylaxis, might with more propriety have been placed first. The fourth part deals with the inebriate's continued progress in building up moral manhood, always from a psychologic standpoint. The treatment of this chapter is exceedingly sympathetic and gives one the impression that the author must have had special opportunities to acquire his knowledge of the inner workings of the inebriate's mind, though he does not say so. The last chapter is devoted to a description of the various inebriate types, nervous, intellectual, criminal, &c. The book is short and good and is well worth reading, and is a splendid volume to put in the hands of the inebriate himself, if he can be induced to read it.—W. M. BARTON.

MALARIA, ETIOLOGY, PATHOLOGY, DIAGNOSIS, PROPHYLAXIS AND TREATMENT. By G. E. HENSON, M. D., St. Louis, Mo. C. V. MOSBY Co., St. Louis, 1913.

It might seem at first thought that a monograph upon the general subject of malaria would be superfluous, taking into consideration the extensive literature that exists upon the subject, and the large number of treatises, big and little, that have been published in the last ten years, devoted to the subject. But the author indicates in his preface, and Dr. Boss of New Orleans specifically states in a brief introduction to the work, that the prevalence of malaria in the United States, particularly in the South, is so great as to constitute a discredit to the intelligence and progressiveness of the nation. This being the case, no work devoted to the eradication of malaria can be superfluous. In Dr. Henson's book of 173 pages, the etiology, pathology, diagnosis, prevention and treatment of malaria are all comprehensively discussed.

The book has twenty-seven illustrations, one in colors. There is apparently nothing original or striking in the work, and the chief use perhaps will be to fasten the attention of the medical profession a little more firmly perhaps than it is already upon the prevalence of this disease in our country and the necessity of every physician living in a malarious district assisting as far as he is able, particularly in the early recognition and treatment and eradication of malaria.—W. M. BARTON.

A COMPROMISE.—Doctor: "You'll have to cut out some of this wine, woman and song business; it's killing you."

Patient: "All right, doc, I'll never sing again."—*Ex.*

RECENT PUBLICATIONS BY PHYSICIANS OF THE DISTRICT OF COLUMBIA.

W. M. Barton ; Copper chemotherapy, with special reference to the double tartrate of copper oxide and sodium ; *Mo. Cyclop. and Med. Bull.*, November, page 649, and December, page 722.

F. B. Bishop ; High frequency currents ; *Va. Med. Semi-Mo.*, December 12, page 424.

J. H. Bryan ; Case of ulceration of larynx ; perichondritis of arytenoid cartilages ; abscess and partial exfoliation of both cartilages ; resulting from typhoid ; *Annals Otol., Rhinol., and Laryngol.*, September.

W. P. Carr ; Cancer situation ; *Surg., Gynec. and Obstet.*, October.

H. A. Fowler ; Closed tuberculosis pyonephrosis ; *Jour. A. M. A.*, January 3, page 12.

W. H. Frost ; Epidemiologic studies of acute anterior poliomyelitis ; Bull. 90, Hygienic Laboratory, October, 1913.

F. H. Garrison ; Edwin Klebs ; *Science*, December 26, page 920.

H. E. Haseltine, P. H. S. ; Paralysis during antirabic treatment ; Reprint 148, Public Health Reports.

H. H. Hazen ; Acute eczema early in course of syphilis ; *Southern Med. Jour.*, October 1.

M. J. Karpas ; Warning against non-scientific diet systems ; *Old Dom. Jour. Med. and Surg.*, November, page 225.

H. H. Kerr ; Intestinal anastomosis with report of a septic basting stitch method ; *Surg., Gynec. and Obstet.*, October.

R. S. Lamb ; Cataract extraction with conjunctival bridge ; *Ophthalmic Record*, November, page 645.

R. M. LeComte ; Adenomata of the islands of Langerhans ; *Jour. Med. Res.*, December, page 251.

G. J. Lochboehler ; Disease from eating chestnuts ; *Jour. A. M. A.*, December 27, page 2313.

E. P. Magruder ; Infantile paralysis affecting lower extremities, its surgical treatment and possibilities of cure ; *N. Y. Med. Jour.*, November 8.

J. B. Nichols ; The diet in gastric ulcer and hyperchlorhydria ; *Jour. A. M. A.*, January 3, page 22.

H. A. Ong ; Serotherapy of epidemic cerebro-spinal meningitis ; report of cases ; *Archiv. Pediat.*, October.

W. F. R. Phillips ; The medical profession and medical education ; *Southern Med. Jour.*, October, page 682.

C. W. Richardson ; Vasomotor disturbances of upper air tract ; *Annals Otol., Rhinol. and Laryngol.*, September.

W. C. Rucker, P. H. S. ; The sanitary waiting room ; Reprint 147, Public Health Reports. Also, Legal aspect of the federal protection of the public health ; *Jour. A. M. A.*, November 15, page 1768.

C. A. Simpson; A plea for the more accurate administration of the x-ray in the treatment of skin diseases and cancer; *Southern Med. Jour.*, December, page 784.

French Simpson, P. H. S.; Rat proofing a municipal sewer system; Reprint 149 from Public Health Reports.

H. M. Smith; The mysterious life of the common eel; *Nat. Geog. Mag.*, October, page 1140.

J. W. Trask; The citizen and the public health; Reprint 150 from Public Health Reports, November 7, 1913.

J. R. Verbrycke; Diagnosis of gastric ulcer; *Amer. Jour. Med. Sci.*, November.

F. C. Walsh; New kidney forceps; *Jour. A. M. A.*, December 6, page 2064.

W. A. Wells; Influence of sounds of different pitch, duration and intensity, in production of auditory fatigue; *Laryngoscope*, October.

W. A. White; Genetic concept in psychiatry; *Amer. Jour. Insan.*, October.

M. I. Wilbert and M. G. Motter; Poisons and habit-forming drugs; a digest of laws and regulations relating to the possession, use, sale and manufacture of poisons and habit-forming drugs, enacted during 1912 and 1913, now in force in the United States. Reprint 146 from Public Health Reports, October.

PERSONAL NOTES.

Dr. C. C. Ammerman has been appointed an Assistant Surgeon, Medical Reserve Corps, U. S. Navy.

Drs. Carmichael and Yarrow have been added to the Night Dispensary of the Emergency Hospital.

Dr. G. B. Crow, U. S. Navy, has been transferred from the Naval Medical School to the Naval Hospital, Brooklyn, N. Y.

Dr. F. R. Hagner attended the meeting of the Medical Society of the County of New York and read a paper on Neoplasms of the bladder; operation and treatment. See *Jour. A. M. A.*, Dec. 6, page 2095.

Drs. A. B. Hooe, A. R. Shands and G. T. Vaughan attended the annual meeting of the Medical Society of Virginia at Lynchburg, Oct. 21 to 24 and took part in the discussions.

Dr. Evelyn G. Mitchell has been appointed an interne at the Woman's Hospital, Philadelphia, Pa.

Mrs. Simpson, mother of Dr. J. C. Simpson, died Nov. 30, 1913.

Dr. W. G. Stimpson, Surgeon U. S. P. H. S., has been ordered to duty in the Bureau in this city.

Dr. J. A. Watkins, Assistant Surgeon, U. S. P. H. S., has been ordered to duty at the Hygienic Laboratory.

The following have been appointed to the Boards of Pension Examiners in this city: Board No. 1, Drs. Gannon, Van Renssalaer, Lawn Thompson and Ellyson; No. 2, Drs. Biggs, Ready, Clifford Cox and L. A. Walker; No. 3, Drs. T. B. Dixon, Valentine, Howard Fisher and Bowker.

The Medical Society of the District of Columbia.

OFFICERS FOR 1914.

President, ... J. R. WELLINGTON.
1st Vice-President, ... R. A. HOLDEN.
2d Vice-President, ... E. Y. DAVIDSON.
Recording Secretary, ... H. C. MACATEE.
Corresponding Secretary, ... A. L. HUNT.
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Alternate, P. S. ROY.
Vice-President of Washington Academy of Sciences, J. R. WELLINGTON.
Representative on National Legislative Committee of Council on Health and Public Instruction, A. M. A., J. D. Thomas.

STANDING COMMITTEES FOR 1914.

Executive Committee.—To serve one year. D. K. Shute, T. N. McLaughlin, D. O. Leech.
To serve two years. J. B. Nichols, L. H. Reichelderfer, F. R. Hagner.
To serve three years. John Van Rensselaer, J. S. Wall, W. P. Carr.
Also ex officio.—J. R. Wellington, C. W. Franzoni, H. C. Macatee, A. L. Hunt, G. Wythe Cook, W. H. Wilmer, Frank Leech, D. S. Lamb, G. Wythe Cook, *Chairman.*
Committee of Censors.—Frank Leech, A. B. Hooe, I. J. Heiberger, Louis Mackall, F. R. Hagner.
Committee on Program.—A. L. Hunt, P. S. Roy, E. B. Behrend, W. A. Wells, B. M. Randolph.
Committee on Publication.—D. S. Lamb, B. G. Pool, H. H. Donnally, Truman Abbe, H. C. Macatee.

SPECIAL COMMITTEES.

Committee on Red Cross Medical Work.—L. H. Reichelderfer, John Van Rensselaer, E. A. Balloch (from Executive Committee), J. R. Wellington and H. C. Macatee (*ex officio*).
Committee on Public Instruction.—J. B. Nichols, W. M. Barton, L. B. T. Johnson, E. C. Folkmar (representing National Committee on Public Health Education Among Women), Oscar Wilkinson (representing Committee of A. M. A. on Conservation of Vision).

MEMBERS.*

Abbe, Truman, *A. B.*,	Stoneleigh Court.
Acker, George Nicholas, *A. M.*,	913 16th, n. w.
Adams, Roy Delaplaine,	Stoneleigh Court.
Adams, Samuel Shugert, *A. M.*,	1801 Conn. av., n. w.
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Armstrong, William John,	1629 Connecticut av., n. w.
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Baker, Robert W.,	1816 I, n. w.
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Barber, R. T. J.,	107 Rhode Island av., n. w.
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Barnes, Noble Price,	208 Maryland av., n. e.
Barnhart, Grant S.,	916 Massachusetts av., n. w.
Barry, Edmund,	201 East Capitol.
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Battle, Lewis Junius, *Ph. B.*,	1401 Kennedy, n. w.
Bayne, J. Breckinridge,	1141 Connecticut av., n. w.
Beale, Robert Somervell,	1318 19th, n. w.
Beall, Charles Middleton,	2715 14th, n. w.
Beatty, Louis Kelly,	610 East Capitol.
Behrend, Adajah,	1214 K, n. w.
Behrend, Edwin Bernhard, *A. B.*,	1854 Biltmore, n. w.
Bennett, Adolphus Bogardus, Jr.,	The Farragut.
Bermann, Isador Samuel Leopold,	2341 18th, n. w.
Biggs, J. Rosier,	213 11th, s. w.
Billard, Chas. Louis,	The Ethelhurst.
Birtwell, Daniel Thos.,	1325 Columbia Road, n. w.
Biscoe, Frank Lee,	The Farragut.
Bishop, Francis Besant,	1913 I, n. w.
Bishop, Harry A.,	1913 I, n. w.
Blake, Louisa Miller,	40 Rhode Island av., n. w.
Blakistone, Julian C.,	The Farragut.
Bogan, Joseph B.,	606 Massachusetts av., n. w.
Bogan, Saml. Wm.,	
Borden, Daniel LeRoy,	The Rochambeau.
Borden, Wm. Cline,	1801 California av., n. w.
Boswell, Archie Ward,	928 Maryland av., n. e.
Bovée, John Wesley,	The Rochambeau.
Bowen, William Sinclair,	1339 Conn. av., n. w.
Bowers, John E.,	907 M, n. w.
Bowker, Chas. H.,	The De Soto.
Boyd, George Washington, *Phar. D.*,	121 2d, n. e.
Braden, Frank W.,	904 East Capitol.

*Members are requested to report errors in name or address and changes of address to the Committee on Publication, Corresponding Secretary, and Treasurer.

Bradfield, Jefferson Davis, *Phar. L.*,	1506 North Capitol.
Brady, Zadoc M.,	Kenilworth, D. C.
Brandenburg, Wilbur H. R.,	1416 R, n. w.
Breckinridge, Scott Dudley,	1726 M, n. w.
Bricker, Sacks,	Washington Asylum Hospital.
Briggs, John Bradford, Jr., *B. S.*,	1628 K, n. w.
Briscoe, John Parran,	1339 Connecticut av., n. w.
Brooks, Floyd Vernon,	Bond Building.
Brooks, J. Lester,	506 A, n. e.
Brown, Charles W.,	1411 K, n. w.
Brumbaugh, Gaius Marcus, *M. S.*,	905 Mass. av., n. w.
Bryan, Joseph Hammond,	818 17th, n. w.
Buck, John R.,	1646 Irving, n. w.
Burbank, Caryl,	2147 F, n. w.
Burch, Edward Warren,	336 Maryland av., n. e.
Burch, W. T.,	1627 Connecticut av., n. w.
Burke, John Woolfolk,	1610 I, n. w.
Bush, Daniel P.,	933 N, n. w.
Butler, William Kennedy, *A. M.*,	1207 M, n. w.
Butz, A. D.,	428 8th, s. e.
Byrns, William Francis, *A. M.*,	1923 Calvert, n. w.
Cabell, Julian May,	1730 M, n. w.
Carmichael, Randolph Bryan,	818 17th, n. w.
Carr, William Phillips,	1418 L, n. w.
Carrico, Albert Joseph,	2903 14th, n. w.
Chadwick, DeWitt Clinton,	The Burlington.
Chamberlin, Frank Tenney,	1323 M, n. w.
Chappell, John Wm., *B. S.*,	3901 Grant Rd., Tenleytown, D. C.
Chipman, Cline N.,	606 6th, s. w.
Chisolm, Francis M.,	The Rochambeau.
Christmas, Wm. W.,	The Beacon.
Clark, George C.,	321 East Capitol.
Clark, Wm. Earl,	The Rochambeau.
Claytor, Thomas Ash,	1826 R, n. w.
Coale, Edith Seville,	The Wyoming.
Cole, Geo. Robt. Lee, *Phar. D.*,	418 7th, s. w.
Cole, John Thos.,	820 H, n. e.
Collins, Charles Read,	1641 K, n. w.
Conklin, Coursen B.,	1342 R, n. w.
Conklin, Rush West,	20th and R. I. av., n. e.
Constas, John,	1111 Massachusetts av., n. w.
Cook, George Wythe, *LL. D.*,	3 Thomas Circle.
Cook, Richard Lloyd,	3 Thomas Circle.
Copeland, Edgar P.,	The Rockingham.
Corey, George Boaz,	1731 Kilbourne Place.
Corley, Karl Coates,	1787 Columbia Road, n. w
Coumbe, Oscar Henry,	1127 Euclid, n. w.
Cox, Oliver Clement,	1320 11th, n. w.
Cox, S. Clifford,	2018 I, n. w.
Crook, Harrison,	The Sherman.
Crosson, Henry Joseph,	1746 M, n. w.
Cuthbert, Middleton Fuller,	1462 Rhode Island av., n. w.
Dabney, Virginius,	1633 Connecticut av., n. w.
Darnall, M. Hubbard,	3536 N. H. av., n. w.
Davidson, Edward Y.,	512 East Capitol.
Davis, Carl Lawrence,	1355 Harvard, n. w.
Davis, Wm. Thornwall,	927 17th, n. w.
Deeble, Horace M.,	The Astoria.
De Weese, Cornelius,	The Farragut.

Digges, J. H., 805 First, n. w.
Dillenback, William J., 1344 R, n. w.
Dixon, Henry Marshall, 2013 I, n. w.
Dixon, Taylor Boyd, 1516 R, n. w.
Dollman, Clarence M., 2915 14th, n. w.
Donnally, Harry Hampton, *A. M., B. S.*, 1612 I, n. w.
Douglas, James F., 516 East Capitol.
Dowling, Thos., 1771 Lanier Place, n. w.
Duehring, Frank Edward, 1008 M, n. w.
Duffey, Hugh Clarence, 929 O, n. w.
Dufour, Clarence Ruter, *Phar. D.*, 1343 L, n. w.
Dunlop, John, *B. S.*, 1621 Connecticut av., n. w.
Dunmire, Roy Franklin, 119 8th, s. e.
Dunnigan, John P., 220 B, s. e.
Dye, Hobart Southworth, 1327 L, n. w.
Ecker, Lewis C., 1633 Connecticut av., n. w.
Edmunds, Meade R., 1217 K, n. w.
Egbert, Edward Homer, The Cairo.
Eliot, Johnson, 720 H, n. e.
Eliot, Llewellin, *A. M.*, 1106 P, n. w.
Elliott, Henry Randall, Jr., The Farragut.
Ellyson, Robert Maitland, 1120 13th, n. w.
Emmons, Charles M., *LL. M.*, 1100 Pennsylvania av., s. e.
Erbach, Amelia, 709 East Capitol.
Erving, Emma Lootz, *A. B.*, 922 17th, n. w.
Erving, William Gage, *A. B.*, 922 17th, n. w.
Evans, Warwick, 1105 9th, n. w.
Ferguson, Charles Emory, 1648 North Capitol.
Fillebrown, John Potts, *M. E.*, Stoneleigh Court.
Finley, Clara Bliss, 1807 Phelps Place.
Fisher, Howard, *A. M.*, The Mendota.
Fisher, Raymond Adams, 505 B, n. e.
Floria, Salvatore,
N. Y. State Hosp. Tuberculosis, Raybrook, N. Y.
Flynn, James Augustin, 1333 Q, n. w.
Folkmar, Elnora Cuddeback, 1818 N, n. w.
Foote, John A., 1716 M, n. w.
Foster, Romulus A., 2207 Massachusetts av., n. w.
Fowler, Henry Atwood, *B. S.*, The Cumberland.
Fowler, William Chas., 1812 1st, n. w.
Fox, William Henry, *A. M.*, 1826 Jefferson Place.
Foye, Amelia Frances, 1118 13th, n. w.
Frankland, Walter Ashby, The Champlain.
Franklin, Edmund T. M., 1315 19th, n. w.
Franzoni, Charles William, *Ph. B.*, 605 I, n. w.
Fremont-Smith, Frank, *A. B.*, 1808 Massachusetts av., n. w.
French, William J., 1742 18th, n. w.
Friedrich, Leon Leigh, 329 East Capitol.
Frischkorn, R. W., 1242 Newton, n. e.
Fry, Henry Davidson, *Sc. D.*, 1929 19th, n. w.
Fuller, Homer G., *Ph. B.*, The Farragut.
Gannon, James A., 1219 Connecticut av., n. w.
Garnett, A. Y. P., 1214 18th, n. w.
Garrison, Fielding H., 2532 13th, n. w.
Gibson, Frank Eugene, 927 I, n. w.
Gill, William T., 442 M, n. w.
Gillette, Hubbard, 1930 8th, n. w.
Glascock, Alfred, Govt. Hosp. Insane.
Glazebrook, Larkin White, 2022 P, n. w.

Gleeson, James Knox Polk,	1451 Harvard, n. w.
Glushak, Leopold,	605 P, n. w.
Goodman, Wm. R.,	1332 12th, n. w.
Graham, Neil Duncan,	The New Berne.
Graham, Neil Ferguson,	909 New York av., n. w.
Grasty, Thomas Sanford Dunaway,	1273 N. H. av., n. w.
Greene, Lewis S.,	1610 I, n. w.
Greene, Samuel H., Jr.,	1320 Q, n. w.
Greene, Willard P.,	648 East Capitol.
Griffith, Chas. I.,	1371 Monroe, n. w.
Groff, Chester C.,	1107 I, n. w.
Groover, Thomas Allen,	The Iroquois.
Gunion, John Paul,	927 O, n. w.
Gunnell, F. M.,	600 20th, n. w.
Gunning, Edward J.,	The Kingman.
Gwynn, William Clarence,	1514 30th, n. w.
Haas, Carlton D.,	3018 13th, n. w.
Hagner, Chas. Evelyn,	1824 19th, n. w.
Hagner, Francis Randall,	The Farragut.
Hahn, Milton,	1847 Kalorama Road, n. w.
Hall, Arthur Joseph,	625 I, n. w.
Hamilton, Ralph Alexander,	924 15th, n. w.
Hammett, Chas. Massey,	1330 I, n. w.
Hammond, Thos. Victor,	1713 H, n. w.
Hardesty, Wm. S.,	The Wellington.
Hardin, Bernard Lauriston, *B. S.*,	1311 Conn. av., n. w.
Harding, Harry Theodore,	1459 Girard, n. w.
Harrington, Francis Edward,	1106 P, n. w.
Harrison, Bernard Hooe,	The Home.
Hart, James W.,	2156 F, n. w.
Harvey, H. M.,	1454 Newton, n. w.
Hasbrouck, Edwin Marble,	4909 14th, n. w.
Hazen, Henry H.,	The Rochambeau.
Hazen, W. P. C.,	511 East Capitol.
Heiberger, Ida Johanna,	The Concord.
Heinecke, George Burton,	Georgia av. and Madison, n. w.
Heitmuller, Geo. H., *A. B.*,	1333 N, n. w.
Heller, Joseph Milton,	The Marlborough.
Hemler, Wm. F.,	706 8th, n. w.
Henning, Carl,	The Rochambeau.
Hickling, Daniel Percy,	1304 Rhode Island av., n. w.
Higgins, Daniel Witter,	808 N. C. av., s. e.
Holden, Raymond Thos.,	802 6th, s. w.
Holmes, Mary,	227 1st, n. e.
Hooe, A. Barnes,	1220 16th, n. w.
Hooe, Robert Arthur,	The Burlington.
Hornbrook, Frank Wheeler,	1217 Connecticut av., n. w.
Hough, William Hite, *Phar. D.*,	The Toronto.
Howard, Stanton Wren,	The Gotham.
Hume, Howard,	1344 19th, n. w.
Hummer, Harry Reid,	Canton, S. D.
Hunt, Arthur LeRoy, *A. B.*,	The Burlington.
Hunter, Montgomery,	1728 P, n. w.
Huntington, Wm. Henry,	2330 Mass. av., n. w.
Hurtt, Harry,	1710 H, n. w.
Hyatt, Franck,	The Rochambeau.
Hyde, Chas. Wilbur,	The Alabama.
Hynson, Lawrence Maxwell,	1335 N, n. w.
Ingersoll, R. S.,	212 E. Grace, Richmond, Va.

Jack, William Alexander, Jr., 1918 Biltmore, n. w.
Jackson, Virgil B., The Brunswick.
Jeffries, Joseph Arthur, Jr., 901 20th, n. w.
Jenner, Norman Richards, 1110 Rhode Island av., n. w.
Johnson, Henry Lowry Emilius, 1821 Jefferson Place, n. w.
Johnson, Joseph Taber, *A. M., Ph. D.*, 926 Farragut Square.
Johnson, Loren Bascom Taber, 2108 16th, n. w.
Johnson, Louis Alward, 711 C, s. w.
Johnson, Paul Bowen Alden, 3208 17th, n. w.
Johnson, Stuart C., 1133 Girard, n. w.
Johnston, Henry V., Hosp. Santa Tomas, Ancon, C. Z.
Jones, Edward B., 1217 Connecticut av., n. w.
Jones, Thos. Glenn, 228 1st, s. e.
Jung, Franz August Richard, 1229 Connecticut av., n. w.
Jung, Sofie Amalie Nordhoff, 1229 Connecticut av., n. w.
Junghans, John Henry, *A. M.*, 417 D, n. e.
Karpeles, Simon Rufus, 1120 5th, n. w.
Kaufman, Harry Marx, The Burlington.
Kaveney, Joseph J., The Elkton.
Kearney, Henry W., 1229 O, n. w.
Kebler, Lyman Frederick, 1322 Park Road.
Keith, Emma Corey Starr, 1615 Baltimore, Muskogee, Okla.
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Kemble, Adam, *Phar. D.*, The Cecil.
Kerr, Henry Hyland, *C. M.*, 1742 N, n. w.
Key, Sothoron, *M. S.*, 1716 H, n. w.
Keyser, Carl Schurz, 1218 19th, n. w.
Kilroy, James J., 103 I, n. w.
Kimball, Arthur Herbert, *B. S., A. M.*, The Burlington.
King, Albert Freeman Africanus, *A. M., LL. D.*, 1315 Massachusetts av., n. w.
King, Ernest Frothingham, *A. M.*, Bond Building.
Kinyoun, Joseph James, 1423 Clifton, n. w.
Klemm, John Wm., 2008 I, n. w.
Kober, George Martin, *LL. D.*, 1819 Q, n. w.
Kolipinski, Louis, *Phar. D.*, 631 I, n. w.
Koones, Charles Kneller, 20 Iowa Circle, n. w.
Kramer, Thomas Best, 634 A, s. e.
Lamb, Daniel Smith, *A. M., LL. D.*, 2114 18th, n. w.
Lamb, Isabel Haslup, 2114 18th, n. w.
Lamb, Robert Scott, The Cecil.
Lawrence, Albert Lynch, *Phar. D.*, 1330 Mass. av., n. w.
Lawson, Huron Willis, 1117 Vermont av., n. w.
Lee, Thomas Sim, *A. B.*, 1603 19th, n. w.
Leech, Daniel Olin, 1237 Massachusetts av., n. w.
Leech, Frank, 1372 Columbia Road.
Lehr, Louis Chas., *A. B.*, 1737 H, n. w.
LeMerle, Eugene Lyman, 2011 Q, n. w.
Lemon, Hanson Thos. Asbury, 903 M, n. w.
Lewis, Duff Green, *A. B.*, 1311 14th, n. w.
Lewis, Harry S., Emergency Hospital.
Lewis, Samuel Edwin, 1418 14th, n. w.
Lindsay, Janvier Whitton, 1808 Kilbourne Place.
Lindsey, John Hathaway, The Carlisle.
Linville, Thos., 905 10th, n. w.
Little, Joseph W., 1313 14th, n. w.
Little, Richard Mitchell, 1213 East Capitol.
Littlepage, Wm. Houston, The Alabama.
Lochboehler, George John, *Phar. D.*, 55 K, n. w.

Logie, Benjamin Rush, 1836 Conn. av., n. w.
Loring, Frank Boot, 1420 K, n. w.
Lowe, Thomas F., 205 H, n. w.
Luce, Charles Roscoe, 215 2d, s. e.
Luckett, L. Fleet, 1419 Rhode Island av., n. w.
Lynch, Robert L., 3931 14th, n. w.
Lyon, Martha M. Brewer, 48 V, n. w.
McArdle, Thomas Eugene, *A. M.*, 1730 H, n. w.
McCarthy, Joseph J., 1819 Adams Mill Road.
McCormick, John Henry, 1006 Selma street, Mobile, Ala.
McGuire, James Clark, *A. M.*, Cosmos Club.
McKaig, Joseph Francis, *A. B.*, 3122 18th, n. w.
McKay, James George, 2009 Columbia Road.
McKee, Wm. P., 1634 S, n. w.
McKimmie, Oscar Addison Mack, The Valois.
McLaughlin, Thomas Notley, 1226 N, n. w.
McLaughlin, Wm. F., 103 R. I. av., n. w.
McNally, Valentine, *A. M., LL. D.*, 1417 N, n. w.
MacNamee, Arthur M., 806 O, n. w.
McPherson, Dorsey Mahon, 1810 15th, n. w.
Macatee, Henry Cook, 1478 Harvard, n. w.
Machen, Francis Stanislaus, 3206 17th, n. w.
Mackall, Louis, 3044 O, n. w.
Madigan, John J., The Congressional.
Magee, George H., 604 H, n. e.
Magee, Michael D'Arcy, *A. M.*, 1623 Conn. av., n. w.
Magruder, Ernest Pendleton, *A. M.*, The Farragut.
Magruder, George Lloyd, *A. M.*, Stoneleigh Court.
Mallan, Thomas Francis, 820 Connecticut av., n. w.
Mallory, Wm. J., 1720 Connecticut av., n. w.
Malone, Wilson Prestman, The Farragut.
Manning, Wm. J., The Alabama.
Marbury, Charles Clagett, *A. B.*, 1015 16th, n. w.
Marshall, Collins, 2507 Pennsylvania av., n. w.
Martel, Leon A., 1339 Conn. av., n. w.
Martin, Thos. Chas., 1725 N, n. w.
Martyn, Herbert Edward, 614 East Capitol.
Mason, Elijah Lumbia, The Portner.
Mason, Robert French, 1431 21st, n. w.
Mason, Wm. Beverly, 1217 Connecticut av., n. w.
Masterson, Wm. Lincoln, Stoneleigh Court.
Mazzei, Francis Anthony, 2 T, n. e.
Mead, Theodore, 928 23d, n. w.
Merrill, Walter Hibbard, *B. L.*, The Northumberland.
Mess, Wm. A., 459 G, n. w.
Metzerott, John Hitz, 1110 F, n. w.
Miller, Gideon Brown, *B. Sc., C. E.*, 1730 K, n. w.
Miller, Maurice Erwin, 1618 H, n. w.
Miller, Thomas, 1616 7th, n. w.
Miner, Francis H., 300 East Capitol.
Mitchell, James Farnandis, *A. B.*, 1344 19th, n. w.
Mitchell, Joseph Ernest, 510 13th, n. w.
Moore, Mead, The Rochambeau.
Moore, Wm. Cabell, The Wyoming.
Moran, John Francis, *A. B.*, 2426 Pennsylvania av., n. w.
Morgan, Edwin Lee, The Plaza.
Morgan, Francis Patterson, *A. B.*, 3905 Huntington, Chevy Chase Heights.
Morgan, James Dudley, *A. B.*, 919 15th, n. w.

Morgan, Wm. Gerry, *A. B.*,	The Rochambeau.
Morhart, Frederick H.,	1324 9th, n. w.
Morris, George Gideon,	1913 14th, n. w.
Morse, Edwin Emery,	1706 M, n. w.
Moser, James Madison,	1219 Conn. av., n. w.
Motter, Murray Galt, *A. M., B. S.*,	2314 19th, n. w.
Moulden, Wm. Raymond,	Bethesda, Md.
Mudd, T. D.,	1337 Good Hope Road.
Mulcahy, Daniel Dominick, *Phar. D.*,	1216 North Capitol.
Muncaster, Steuart Brown,	907 16th, n. w.
Mundell, Joseph Joshua,	8 Maple View Place, Anacostia.
Murphy, Joseph Alexander,	943 L, n. w.
Murphy, Walter C.,	507 4th, n. w.
Murray, Thomas Morris,	
Musgrave, Percy,	Bar Harbor, Me.
Neale, Richard A.,	1209 U, n. w.
Neff, Wallace, *A. M.*,	930 16th, n. w.
Neill, Thos. E.,	1217 Connecticut av., n. w.
Nevitt, James Ramsay,	1820 Calvert, n. w.
Newell, William Sawyer,	The Champlain.
Newgarden, George J., *A. M.*,	1633 Mass. av., n. w.
Nichols, John Benjamin,	1321 Rhode Island av., n. w.
Norcross, Alfred C.,	819 Taylor, Petworth.
Norris, Phebe Russell,	The Iowa.
Ober, George Clarke,	125 B, s. e.
O'Donoghue, John Alphonso, *A. M.*,	909 16th, n. w.
O'Malley, Mary,	Govt. Hosp. Insane.
Ong, Harry A.,	1768 Columbia Road.
Owen, Wm. Otway,	Southern Building.
Owens, Samuel Logan,	The Plaza.
Parker, Edward Mason,	1726 M, n. w.
Parker, Henry Pickering, *A. B.*,	1728 Connecticut av., n. w.
Parsons, Alfred Vandiver,	Takoma Park, D. C., Carroll and Maple av.
Parsons, Mary Almera,	937 New York av., n. w.
Patten, Wm. Francis,	The Cairo.
Perkins, Wm. Robert, *Phar. D.*,	1332 15th, n. w.
Perry, George Nelson,	1316 Q, n. w.
Petteys, Charles Volney,	1211 Clifton, n. w.
Pfender, Chas. A.,	304 Rhode Island av., n. w.
Phillips, Wm. Fowke Ravenel,	Mobile, Ala.
Pickford, Edward F., *A. B.*,	422 8th, s. e.
Pigott, J. Burr,	1400 M, n. w.
Pile, Mayne Marshall,	15th and U, n. w.
Pole, Samuel Boyce,	216 8th, n. e.
Polkinhorn, Henry Alexander,	1201 M, n. w.
Pool, Benjamin George,	945 Rhode Island av., n. w.
Poole, Thos. A.,	5611 Conn. av., n. w.
Portman, Adeline Elwell, *A. M.*,	Chevy Chase, Md.
Potter, James Albert,	300 2d, s. e.
Poulton, Wm. E.,	227 4½, s. w.
Prentiss, Daniel Webster, *B. S.*,	1213 M, n. w.
Price, Harry M.,	1761 U, n. w.
Price, Malvern Hill,	5th and H, n. e.
Prosperi, Milton Hickox,	216 8th, s. e.
Pyles, R. A.,	2015 Nichols av., Anacostia.
Ramsburgh, Jesse Houck, *A. M.*,	The Portner.
Randolph, Buckner Magill,	The Toronto.
Ransdell, Robert C.,	1891 Lanier, n. w.

Ray, Anthony Moreland,	4800 Wisconsin av., n. w.
Reede, Edward Hiram,	1223 N. J. av., n. w.
Reeve, Jesse Newman,	926 Farragut Square.
Reeves, William Pinkney,	The Congressional.
Reichelderfer, Luther Halsey,	1721 Connecticut av., n. w.
Reisinger, Emory Wm.,	1228 16th, n. w.
Rench, Victor B.,	1300 Rhode Island av., n. w.
Repetti, Frederick Francis,	149 B, s. e.
Repetti, John Joseph,	404 Seward Square.
Richards, Alfred,	The Seward.
Richardson, Charles Williamson,	1317 Conn. av., n. w.
Richardson, Edward Elliott, *M. S.*,	1101 Alabama av., s. w.
Richardson, James Julius,	1509 16th, n. w.
Richey, Stephen Olin,	732 17th, n. w.
Riggles, John Lewis,	The Champlain.
Rives, Wm. C.,	1702 Rhode Island av., n. w.
Robins, William Littleton,	The Rochambeau.
Rogers, Joseph Decatur,	1400 M, n. w.
Roman, Frederick Ogle,	1337 R, n. w.
Rossiter, Thos. J.,	820 D, s. e.
Roy, Philip Seddon,	1200 Massachusetts av., n. w.
Ruble, W. A.,	Loma Linda, Cal.
Ruedy, Robert Conrad,	621 Maryland av., n. e.
Ruffin, George Mendenhall,	1219 Conn. av., n. w.
Ruffin, Sterling,	1746 K, n. w.
Samson, George C.,	2423 Pennsylvania av., n. w.
Savage, Linnaeus Samuel,	Bennings, D. C.
Sawtelle, Henry Fenno,	3001 11th, n. w.
Schaeffer, Edward Martin,	1808 G, n. w.
Schneider, Elwin C.,	1742 U, n. w.
Schneider, Francis Alphonse,	
Schreiber, H. R.,	502 H, n. e.
Scott, James Foster, *A. B.*,	The Albemarle.
Seibert, Edward Grant, *Phar. G.*,	1545 I, n. w.
Selby, John Hunter,	1621 Connecticut av., n. w.
Sellhausen, Ernest August,	640 G, n. w.
Sellhausen, Harry A.,	640 G, n. w.
Sessford, Joseph S. F.,	1738 F, n. w.
Shands, Aurelius Rives,	901 16th, n. w.
Shaw, John Watson,	1453 Rhode Island av., n. w.
Shoup, Jesse,	The Roland.
Shute, Daniel Kerfoot, *A. B.*,	1719 De Sales, n. w.
Sillers, Robert Fry,	313 H, n. w.
Simpson, Chas. August,	1217 Connecticut av., n. w.
Simpson, John Crayke,	1421 Massachusetts av., n. w.
Sisco, H. W.,	Baltimore, Md.
Skinner, J. O.,	Columbia Hospital.
Sloat, Jesse Irving,	The Congressional.
Smart, Benjamin Horace,	3d and Rhode Island av., n. w.
Smith, Dwight Gordon, *A. B.*,	1421 Columbia Road.
Smith, P. G.,	Porto Rico.
Snowden, Edgar,	1900 S, n. w.
Snyder, Arthur Augustine,	1126 16th, n. w.
Sohon, Elizabeth,	512 I, n. w.
Sohon, Frederick,	512 I, n. w.
Sorrel, George R.,	616 F, s. w.
Sothoron, Elmer Hezekiah, *B. E.*,	1921 I, n. w.
Sowers, Wm. F. M.,	1706 R. I. av., n. w.
Sowers, Zachariah Turner, *A. M., Ph. B.*,	1707 Mass. av., n. w.

Spencer, J. Blair,	1214 18th, n. w.
Spire, Richard Lee,	1609 North Capitol.
Sprigg, William Mercer,	The Rochambeau.
Squire, Susan Johnson,	Percival Hotel, Los Angeles, Cal.
St. Clair, Francis Alphonzo, *Phar. D.*,	1319 T, n. w.
Stanley, A. Camp,	1621 22d, n. w.
Stanton, Wm. Joseph,	3323 O, n. w.
Staples, Aubrey Horatio,	1739 S, n. w.
Stavely, Albert Livingston, A. M.,	1744 M, n. w.
Steltz, Peter Henry, Jr.,	611 North Carolina av., s. e.
Stephenson, Eugene Theodore,	653 Maryland av., n. e.
Stewart, John W.,	1202 K, n. w.
Stone, Charles Granville,	5756 Georgia av., n. w.
Stone, Isaac Scott,	Stoneleigh Court.
Stoutenburgh, John Albertson,	116 2d, s. e.
Strobel, Mary Louise,	16 R, n. w.
Stromberger, Henry Holliday,	1745 North Capitol
Stuart, Albert Rhett, *A. M.*,	
Stuart, James, *A. B.*,	1315 12th, n. w.
Suddarth, James Littleton,	817 North Capitol.
Sullivan, Robt. Young,	The Burlington.
Suter, Henderson,	3026 N, n. w.
Sutherin, John Wesley,	1331 Vermont av., n. w.
Swain, O. A. T.,	321 E, n. e.
Syme, Wm. Henry,	2445 18th, n. w.
Talbott, John Allan,	The Ashley.
Tastet, David W.,	2827 11th, n. w.
Tayler-Jones, Louise, *M. S.*,	1217 Connecticut av., n. w.
Taylor, Lewis Harvie,	The Cecil.
Tewksbury, W. D.,	4200 Georgia av., n. w.
Thomas, Ada Rebecca,	The Thomas.
Thomas, John Daniel, *A. B.*,	1726 M, n. w.
Thomas, Wm. J. G.,	
Thompson, Edgar Dorman, *A. M.*,	1247 North Capitol.
Thompson, Joseph Ford,	Cosmos Club.
Thompson, J. Lawn,	The Cumberland.
Thompson, Millard Filmore, *D. D. S.*,	484 Md. av., s. w.
Thomson, Lewis B.,	3423 16th, n. w.
Thönssen, Wm. Julius Reichmann,	315 C, s. e.
Tibbits, Albert Perkins,	The Laclede.
Titus, Elijah White,	911 16th, n. w.
Tobias, Henry Wood, *B. E.*,	1424 Q, n. w.
Tobin, Richard F.,	123 11th, s. e.
Trimble, Robert S.,	722 18th, n. w.
Tubman, James Richard,	1750 Park Road, n. w.
Upham, W. C.,	128 Maryland av., s. w.
Vale, Frank Palmer,	208 Southern Building.
Valentine, Aloysius W.,	606 North Carolina av., s. e.
Van Rensselaer John, *A. M.*,	The Rochambeau.
Vaughan, George Tully,	1718 I, n. w.
Verbrycke, J. Russell, Jr.,	The Rochambeau.
Vincent, Thomas Norris, *A. M.*,	The Mansfield.
Wagner, Wm. F., *Phar. G.*,	501 L, n. w.
Walker, Allen,	739 Quebec, n. w.
Walker, Reginald Redford,	818 17th, n. w.
Wall, Joseph Stiles,	2017 Columbia Road.
Walsh, Ferdinand Claiborne,	Moore Bldg., San Antonio, Tex.
Walsh, John Edgar,	202 East Capitol.
Walsh, Ralph,	Jerusalem, Md.

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Warner, John W.,	New York City.
Warren, George Walter,	1212 H, n. e.
Waters, Charles L.,	1414 Q, n. w.
Watkins, Edgar Wm.,	1373 Columbia Road, n. w.
Watkins, Samuel Evans,	1115 O, n. w.
Watson, James A.,	201 Nichols av., Anacostia.
Weaver, Clarence Arlington,	1614 Q, n. w.
Webb, Newton E.,	1314 East Capitol.
Webb, Walter Duvall,	1803 Connecticut av., n. w.
Wellington, John Ryder, *A. M.*,	1723 Connecticut av., n. w.
Wells, Walter Augustine,	The Rochambeau.
Werber, Gustavus, *A. M.*,	1353 Q, n. w.
West, Richard Thomas,	2519 14th, n. w.
Wharton, John J.,	The Northumberland.
Wheatley, Charles,	The Montana.
White, Charles Stanley,	911 16th, n. w.
Whitson, Wm. E.,	929 M, n. w.
Wickliffe, Thompson Flournoy,	1408 L, n. w.
Wilkinson, Oscar,	1408 L, n. w.
Wilkinson, Walter Watkins,	The Rochambeau.
Williams, Tom A.,	1705 N, n. w.
Williams, Welton C.,	
Willson, Prentiss,	The Toronto.
Wilmer, William Holland,	1610 I, n. w.
Winter, Eugene Chas. Curtis, *Phar. D.*,	815 4½, s. w.
Wolfe, James Thruston,	1843 Calvert.
Wood, George Wm.,	2906 P, n. w.
Wood, Wm. Pleasant,	227 B, n. e.
Woodman, Francis J.,	634 A, n. e.
Woodward, Wm. Creighton, *LL. M.*,	1766 Lanier, n. w.
Wright, Hamilton K.,	1215 19th, n. w.
Wynkoop, James C.,	1629 14th, n. w.
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Yarrow, Henry Crecy,	926 17th, n. w.
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Young, Wm. Glenn,	1737 H, n. w.

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AUTOSEROTHERAPY IN SEROFIBRINOUS PLEURISY.*

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Washington, D. C.

In 1890 Debove, Rémond and Renault experimented with serous exudates obtained from tuberculous individuals and by injecting ascitic fluid under the skin of the patients thus afflicted observed a rise in temperature and general phenomena of reaction which led them to conclude that this exudate contained substances chemically analogous to, if not identical with, those designated by Koch as tuberculins. When the report of this discovery was made public in 1891, Gilbert, of Geneva, Italy, was inspired with the thought of utilizing pleuritic exudates as a therapeutic measure in cases of tuberculous pleurisy. He evolved and practised this method and was the first to inject pleuritic fluid under the skin of a patient suffering from tuberculous pleurisy, and he communicated his results in 1894 before the Eleventh International Medical Congress held at Rome, in a paper entitled "Note sur une nouveau traitement de la pléurésie tuberculeuse par la sérothérapie." His first observation was in a male, aged 17, who had pleurisy of five or six days' standing with a moderate amount of effusion on the right side. Gilbert first made an exploratory puncture to assure himself of the serous nature of the effusion, using a needle four to five centimeters in length with sufficiently small caliber to pass through the intercostal space without any difficulty, selected the dorsal region for the puncture, and then, without entirely withdrawing the needle, injected 2 c.c. of this fluid into the subcutaneous tissue of the patient. Five or six hours after the injection he observed a rise in temperature to 39.5 C., preceded by chills and followed by copious sweats, but he did not observe any local discomfort or reaction of any kind. As there was no change in the effusion on the following day he made a second injection. This time the febrile reaction was less pronounced and on the third day

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the temperature, which had ranged from 38 to 38.5 C., returned to normal and remained so.

From this time on Gilbert observed a rapid diminution of the pleural fluid, while the urine, which had been scanty before the injections were made became more abundant and clear. Eight days after the first injection of the pleuritic fluid the effusion was completely absorbed and the patient's general condition had greatly improved. This encouraging result prompted Gilbert to try the method in other cases, and in the initial report of his observations he cites 12 personal cases, 7 cases by Bourget, and one case each by Maillart and Andreae, a total of 21 cases of tuberculous pleurisy with effusion treated by autoserum injections of 1 to 2 c.c. every other day, administering two or more injections as required. In 19 of the 21 cases an active febrile reaction (38.5 to 40 C.) followed the injection and was accompanied by rapid absorption of the pleuritic exudate within a minimum period of six to ten days and a maximum period of three weeks. Every case was benefited by the treatment and 17 cases were completely cured. Gilbert explained his results as being due to the action of the subcutaneous injection of the pleural exudate on the causal factor of the disease, thereby inhibiting its further progress, and called attention to the fact that in the more recent pleurisies the result was better than in later cases. In 1896, two years later, Scarpa, of Turin, next called attention to this method of treatment at the Seventh Congress of Internal Medicine in Rome, and reported 9 cases of serofibrinous pleurisy of tuberculous origin in which he had used autoserotherapy and obtained 6 complete cures, one partial cure and 2 failures.

Nothing more was heard of this method for the next three years, and fresh impetus was again instilled by a report from the Frenchman Breton, of Dijon, in 1899. Breton reported 3 cases of serofibrinous pleurisy of tuberculous nature with large effusions and marked displacement of the heart, which had existed not over 28 days, in which he had employed autoserotherapy in doses of 2 to 5 c.c. at intervals of two to ten days. The first case, a man, aged 57, with a left pleurisy, received six injections, a total of 21 c.c. of the pleural fluid, and was completely cured within 36 days after the first injection. In the second case, a woman, aged 22, with right pleurisy, two injections of 5 c.c. each at intervals of four days were administered, and the effusion disappeared completely in seven days with recovery of the patient. The third case received 17 c.c. of pleuritic fluid in four injections with the result that the fluid was entirely absorbed 14 days after the first injection. These cases were all controlled by radiographic observations. Breton was the first to report an absence of any febrile reaction. In the same year Arcangeli, of

Italy, also reported 8 cases of serofibrinous pleurisy treated by autoserum with 4 cures and 4 failures, and in the same article he mentioned using autoserum in children with tuberculous ascites with good results and expressed himself favorably inclined to this treatment.

We note from the above that during the first six years following Gilbert's report, all observers were loud in their praises of this therapy and the first discordant note appeared in 1900 by Mongour and Gentès. These authors read a paper before the Thirteenth Congress of Internal Medicine of Paris, in which they reported 11 cases of positive pulmonary or pleural tuberculosis with 9 failures, a partial cure in 1 case, and perfect success in 1; in 4 cases with probable pulmonary tuberculosis, 3 were unsuccessful, 1 was cured; and, finally, in 4 nontuberculous pleurisy cases, all were cured. These results led them to conclude that autoserotherapy is a failure in tuberculous effusions, the very cases for which it was advocated by Gilbert, but that the method was efficient in nontuberculous cases only. Immediately upon the heels of this report came an article by Rossi and Garbarini, in 1901, in which the authors stated that they had injected the pleuritic exudate of cases of tuberculous pleurisy in increasing doses (1 to 10 c.c.) but had observed no rise in temperature nor any absorption of the fluid.

Whatever deterrent effect these adverse reports may have had on the medical profession at large was soon dispelled by the authoritative work of Tschigayeff, of St. Petersburg, Russia, who, in 1902, reported 9 cases of serofibrinous pleurisy with complete cure in every instance due to autoserotherapy. Tschigayeff stated that the method was harmless, that in cases of rheumatic origin no reaction followed the injection, while in tuberculous cases a temporary rise in temperature was observed. The increase of the effusion was checked by the injection and in the majority of the cases immediate absorption took place. In acute serofibrinous pleurisy a cure was effected within two weeks, the time of absorption of the exudate being directly proportional to the duration of the disease. In 1903 Donzello reported 5 cases of tuberculous serofibrinous pleurisy in which autoserum was employed successfully. The quantity of urine was almost doubled after injection and no marked febrile reaction occurred. He injected 5 c.c. at a time and made eight injections in the 5 cases. Geronzi, in the same year, reported 2 cases of pleuritic exudate which were cured by autoserotherapy.

The single report on autoserotherapy during 1904 was more inclined to discourage than enthuse the adherents of this method. Michele Landolfi reported 7 cases of pleuritic effusion, ranging from 20 to 70 years of age, in which autoserum injections failed to give the expected results. He observed that in none of the

cases did complete absorption of the fluid occur; in 2 cases of tuberculous serofibrinous pleurisy the fluid was diminished; in one case of bilateral tuberculosis pleurisy autoserotherapy caused a diminution of the fluid in the cavity which had been punctured, but did not remove it entirely; it did not affect the other side; in a case of nontuberculous pleurisy and in a rheumatic case the fluid remained unchanged; in 2 cases of tuberculous pleurisy the fluid even increased after puncture; in 3 cases of tuberculous pleurisy and in a rheumatic case a febrile reaction of 1 to 2 C. was observed; in 3 cases of nontuberculous pleurisy no febrile reaction was noted; in 3 cases of tuberculous pleurisy, thoracentesis was done and Gilbert's method prevented the reforming of the fluid; in 2 cases of nontuberculous pleurisy in which paracentesis was done in addition to autoserum injection, the fluid was not reproduced in one, but recurred in the other; no harm was done in any case. Landolfi was convinced that autoserumtherapy was useless in pleuritic effusions, but he was so profoundly impressed by the constancy with which a febrile reaction occurred in tuberculous cases that he recommended the method of value in autoserodiagnosis.

In 1905, Fede, Iovane and Geronzi reported cases of pleurisy with effusion treated with autoserum. Fede observed 5 cases with a cure in 12 to 13 days, the cases ranging from mild to moderately severe in type. He noted that not only in tuberculous pleurisies but also in those of different nature autoserotherapy was equally efficient. Acute forms yielded more readily than chronic forms. The amount of fluid injected depended on the duration of the disease; 2 to 3 c.c. was sufficient in acute forms, 4 to 5 c.c. in chronic forms. Phenomena of reaction and rise of temperature occurred only in tuberculous pleurisies, and not in any other forms. He joined Landolfi in the advocation of autoserumtherapy as a diagnostic factor in tuberculous pleurisy. A favorable report was rendered by Geronzi, who treated 8 cases of serofibrinous pleurisy, with 6 cures; the remaining 2 cases died from other causes. Iovane was the first to report the use of autoserum in children suffering from serofibrinous pleurisy. He reported 5 cases, in 3 of which tuberculous abdominal ascites complicated the pleurisy; all were cured, although 2 died subsequently from other causes. He recommends autoserotherapy as a reliable therapeutic measure in all forms of serous effusions.

The literature of 1906 does not contain a single report on autoserotherapy or autoplasmotherapy, as some authors choose to designate this method, but in the following year a number of reports appeared. De Blasi experimented in 5 cases of serofibrinous pleurisy by using large doses (10 c.c.) of autoserum with good results in 4 cases; thoracentesis was resorted to in the fifth. Ciauri also reported 5 cases of serofibrinous pleurisy in which

he injected 5 to 10 c.c. in 1 or 2 injections with cure in 4 cases, failure in one. Carletti reported 11 cases with 8 cures and 3 failures. He employed a modified Gilbert's method in 5 cases. He aspirated the pleuritic fluid, preserved it in a sterile vessel for 24 hours and then reinjected it under the skin, thus injecting proteolitic ferments which modified the biochemic action of the exudate and caused autolysis. Three of the 5 cases so treated were cured. Tagliamuro and Mauro employed autoserotherapy in 4 cases of pleuritic effusion with no improvement in 3 cases; the fourth case left immediately after injection and was not seen again. During the same year a more comprehensive account was published by Jona, who reported 15 cases of pleurisy with effusion in which autoserotherapy was done. Three required only 1 injection; 8 received 2 injections; 10 received 3 injections; 3 were given 4 injections each. The time of complete absorption ranged from 6 days to 32 days, the older cases proving more resistant to treatment than the recent ones. A febrile reaction was observed in only 4 cases, one of these was traumatic, the remaining 3 tuberculous. On the other hand 4 tuberculous cases gave no reaction at all. In 13 of the 15 cases increased diuresis was observed. One deduces from his observations that a reaction occurs in the majority of tuberculous cases only, not in all cases, however, and that a febrile reaction may occur in other cases. It it not unlikely, in my opinion, that the traumatism may have been responsible for the reaction in his case. In 1908 only two communications appeared, one by Nassetti, who reported 2 cases treated successfully with autoserum, and a report by Fontana on 9 cases of serofibrinous pleurisy, tuberculous and otherwise, all of which were rapidly cured by autoserotherapy.

Judging from the wealth of literature on the subject of autoserotherapy which appeared in 1909 one might infer that this method of treatment was at last receiving more general recognition. It is not surprising, therefore, to find that not all of the reporters were favorably inclined towards this measure. Le Play reported 3 cases in which the injections merely caused an increase in the quantity of urine, but had no effect whatever on the effusion. Hochhaus reported that he had tried out autoserotherapy in a number of cases of pleurisy with effusion without noting any decisive results. These, however, are the only derogatory reports that appeared in 1909. During the same year there appeared such an overwhelming mass of evidence favorable to autoserotherapy that these isolated discordant reports are mentioned merely because we would be just in our résumé and because the reporters are recognized authorities in the medical arena, whose observations merit consideration. On the other hand Enriquez, Durand and Weill, of Paris, reported 3 cases of serofibrinous pleurisy successfully treated by autoserum. Va-

lenti, of Catania, followed with 8 cases and 8 cures. René Gaultier reported a man, aged 50, with right pleurisy in whom he injected 6 c.c. of the pleuritic fluid at 3 different times, with the result that the first injection was followed by a transitory febrile reaction with subsequent fall to normal temperature, and an abundant diuresis, rapid diminution of the effusion, and improvement in the general condition of the patient. Zimmermann reported 8 cases of serofibrinous pleurisy treated with autoserum. Six cases were cured; pus appeared in one negative case, while the diagnosis pointed to carcinoma in the other. Zimmermann injected 1 to 2 c.c. and sometimes 5 c.c., repeating the injection in two or three days if indications demanded it.

Schnütgen, who had read about Fede's success in autoserotherapy in 1907, decided to employ the same measure in serofibrinous pleurisy and in cases of hemorrhagic and early purulent pleuritis, hydrothorax, ascites, hydrothorax with ascites, and hydrothorax with ascites and pericarditis. He also studied the results following injection into the thigh as compared with thoracic reinjection under the skin without entire withdrawal of the needle, and noted no difference in the result. He therefore returned to the latter method as it is simpler and requires only one penetration with the needle. He injected 1 to 2 c.c. usually every two or three days, repeating the injection as often as six times in some cases. The fluid obtained at the first injection was always submitted to a microscopic examination; the 24 hours' urine was measured and analyzed, and patients were requested to measure the urine on the following days. Some of the patients were bed-patients, others ambulant. Autoserotherapy was done in all cases with the patient in the sitting position. A preliminary physical examination in the same position was always made. In acute cases where the quantity of serofibrinous exudate was small, absorption rapidly followed autoserotherapy. In more advanced cases a cure was brought about more slowly, complete absorption requirng four to five weeks. Autoserotherapy in cases of hydrothorax, ascites, hydrothorax with ascites, hydrothorax with ascites and pericarditis, in hemorrhagic and beginning purulent pleuritis, failed in all but two cases. Schnütgen employed autoserotherapy in 15 cases of serofibrinous pleurisy; 14 were completely cured, and in only one case was aspiration resorted to, and then only to relieve the urgent dyspnoea, and this case developed a chronic pneumonia. All cases were controlled by radiography. As the result of his observations he warmly recommends autoserotherapy as a reliable measure in the majority of cases of tuberculous and nontuberculous pleuritis for the absorption of the exudate. He observed no sequelae and considers infection a negligible factor. He employed diuretics in some cases, and these he considers valuable adjuncts to the treatment.

The crowning achievement for the year 1909 came from Marcou, of St. Petersburg, who reported 82 cases of tuberculous pleurisy, grippal pleuro-pneumonia, typhoid pleurisy, and hydrothorax treated successfully in every instance during the preceding four years. In only one case did he have to resort to thoracentesis. All cases were benefited and the most brilliant results were obtained in the early stages of large effusions. Marcou observed upwards of 200 patients daily in his clinic at St. Petersburg, and whenever a case of pleurisy with effusion was presented showing light, clear or slightly hemorrhagic fluid, autoserotherapy was done. Purulent or seropurulent cases were rejected. He used a simple Luer syringe, introduced the needle, aspirated 2 c.c. of the pleuritic fluid, partly withdrew the needle and reinjected the fluid subcutaneously, and then allowed the patient to remain in the reclining position for half an hour afterwards. He found that one injection effected a cure in the majority of the acute cases. An immediate rise of temperature of 0.2 to 0.5 C. occurred after injection in recent or acute cases, followed by a continuous fall of temperature to normal in five days or more, the time being several days longer in subacute cases. In the cases that show a return of fever at the end of a week, a second injection is indicated. Should fever persist at the expiration of the second week, Marcou believes that it is useless then to continue autoserotherapy, as the condition is probably due to tuberculous infection, against which autoserotherapy is not specific in its action.

Early in 1910 Lambrior rendered a very pessimistic account of 8 cases of tuberculous pleurisy with effusion which he had treated with autoserum. We will have occasion to return to his criticisms later. He cured 4 cases, failed in one, and observed rapid general tuberculization in the remaining 3. Barjon also reported a case of primary tuberculous pleurisy with effusion in which autoserotherapy failed and thoracentesis had to be resorted to for relief. Cantineau was another who spoke adversely of autoserotherapy and recommended thoracentesis as being more reliable.

It would seem at first glance that the consensus of opinion in 1910 was antagonstic to autoserotherapy, but we find opposed to these adverse reports over 100 cases reported with recovery and cure in almost 90 per cent. of the cases. Dodal reported 17 cases of serofibrinous pleurisy in which improvement followed the injections in every instance. Billet and Bressot reported 8 similar cases with 7 cures and only one failure. Boinet and Murel published detailed accounts of 6 cases with cure in 5 out of 6. Dumitriu reported 13 cases with cure in every case, and in addition reported 2 cases of tuberculous peritonitis with ascites successfully treated with autoserum. Sarcinelli, of Italy, re-

ported 5 cases of serofibrinous pleurisy with 4 cures and 1 failure. Weill and Mouriquand graphically report an observation in a young girl, with a very large pleuritic effusion in which autoserotherapy brought about a rapid absorption of the exudate, while Gestro reported an exceptionally favorable result in a girl of 16 years. Signorino performed autoserotherapy in 9 cases with cure in every case. Szurek employed the method in 8 cases with the result that 3 were cured and 2 improved, while 3 were not benefited. Brodovski reported having treated more than ten cases with good results. He also compared the results of autoserotherapy with simple aspiration and found that recovery occurred as readily when the fluid was not reinjected as when it was introduced under the skin. Cros treated 9 cases with autoserum and aspiration combined and obtained a cure in every case; the average duration of all 9 cases being 22 days. In 4 cases he used autoserum alone, in the remaining 5 cases he combined it with thoracentesis. Probably the most interesting report for the year 1910 was Gilbert's second communication, which he read in December, 1909, before the Medical Society of Geneva. In summing up the results in 50 cases in which he had done autoserotherapy he stated that the method was always successful in his hands within 6 to 10 days in incipient cases of pleuritic effusion, while chronic or old cases (three weeks or more) were somewhat less amenable to treatment. He further noted that the method is applicable to all serofibrinous pleurisies whether tuberculous or not, and that the occasional failures encountered were usually due to the underlying cause of the pleurisy.

Taussig, of St. Louis, may justly claim priority for having observed the first 3 cases reported in America. Although his results were far from brilliant, he was fully impressed with its possibilities and advocated the use of autoserum in cases of serofibrinous pleurisy.

Tschigayeff and also Zavadski, of St. Petersburg, Parassin, of Budapest, and Chieffi, of Italy, contributed several series of cases in 1911. Out of the total of 112 cases reported by these authors 78 were cured by autoserotherapy, a percentage of 69.6 of cures with 30.4 per cent. of failures. Several other writers also reported cases during 1911, and among these are two communications by American writers: Rudisch, of New York, who reported 3 cases with recovery in every case, and a report of one case with brilliant results by Eytinge and McGuire, of the United States Navy Medical Corps. Zavadski's work deserves a more detailed report. This observer applied autoserotherapy in 38 cases of pleurisy and treated 86 further cases by other methods. Fifteen of the 38 were cured, and 48 out of the 86 treated by other methods. Death occurred in 3 of the 38; in 9 of the 86 cases. He observed general tuberculosis and death in one case

treated by autoserotherapy. In 1912, Fornaseri, of Turin, reported 5 cases of serofibrinous pleurisy in which he injected 4 to 10 c.c. of the autoserum with complete cure in every case.

A summary of the tabulated case reports contains 565 cases of pleurisy with effusion in which autoserotherapy was employed; 424 cases were cured; 31 cases were benefited and 109 cases failed to show any improvement. If we add the number of cases cured and the number of cases benefited by autoserum treatment, 455 in all, we have 80 per cent. of the cases benefited by this treatment, as opposed to failure in 109 cases or 20 per cent. Excluding the isolated (5) cases of general tuberculization, supposedly due to autoserum injections, but by no means proved, no bad effects were noted in any instance.

Date.	Author.	No. of cases.	Cured.	Improved	Failed.
1894	Gilbert	12			
1894	Bourget	7			
1894	Maillard . . . Total	1	17	0	4
1894	Andreae	1			
1896	Scarpa, ...	9	6	1	2
1899	Breton, ...	3	3	0	0
1899	Arcangeli, ...	8	4	0	4
1900	Mongour & Gentès, . .	19	6	1	12
1902	Tschigayeff, . . .	9	9	0	0
1903	Donzello, ...	5	5	0	0
1904	Landolfi, ...	7	0	4	3
1905	Iovane, ...	5	5	0	0
1905	Futran, ...	3	3	0	0
1905	Stasevich, ...	20	0	0	20
1905	Geronzi, ...	8	6	0	2
1905	Fede, ...	5	5	0	0
1907	Jona, ...	15	15	0	0
1907	Carletti, ...	11	8	0	3
1907	De Blasi, ...	5	4	1	0
1907	Ciauri, ...	5	4	0	1
1907	Tagliamuro & Mauro, . .	4	?	?	3*
1908	Nassetti, ...	2	0	0	0
1908	Fontana, ...	9	9	0	0
1909	Gaultier, ...	1	1	0	0
1909	Le Play, ...	3	0	0	3
1909	Enriquez, Weill & Durand, .	3	3	0	0
1909	Schnuetgen, . . .	15	14	0	1
1909	Zimmermann, . . .	8	6	0	2
1909	Valenti, ...	8	8	0	0

* One lost sight of.

Date.	Author.	No. of cases	Cured	Improved.	Failed.
1909	Marcou, ...	82	82	0	0
1910	Sarcinelli, ...	5	4	0	1
1910	Szurek, ...	8	3	2	3
1910	Boinet & Murel, . . .	6	5	0	1
1910	Dodal, ...	17	8	6	3
1910	Signorino, ...	9	9	0	0
1910	Taussig, ...	3	1	1	1
1910	Billet & Bressot, . . .	8	7	0	1
1910	Dumitriu, ...	13	13	0	0
1910	Lambrior, ...	8	4	1	3
1910	Weill & Mouriquand, . .	1	1	0	0
1910	Gilbert, ...	38	30	8	0
1910	Gestro, ...	1	1	0	0
1910	Spirt, ...	2	2	0	0
1910	Cros, ...	9	9	0	0
1911	Zavadski, ...	38	15	?	23 (?)
1911	Chieffi, ...	3	3	0	0
1911	Eytinge & McGuire, . .	1	1	0	0
1911	Tschigayeff, . . .	47	41	0	6
1911	Parassin, ...	24	19	4	1
1911	Gaussel, ...	1	1	0	0
1911	Pic, ...	1	0	1	0
1911	Gaujoux & Maillet, . .	1	1	0	0
1911	Anglada & Roger, . .	4	0	0	4
1911	Rudisch, ...	3	3	0	0
1912	Fornaseri, ...	5	5	0	0
1912	Devoir, ...	1	1	0	0
1913	Fishberg, ...	12	9	1	2
1913	Pfender, ...	3	3	0	0
		565	424	31	109

Technique.—The technique employed by Gilbert, described in the beginning of this article, was followed with minor modifications by other observers. Marcou used a plain 2 c.c. Luer syringe with a long needle which he introduced into the dorsal region of the thorax, aspirated 2 c.c. of the fluid, partly withdrew the needle, and injected the autoserum under the skin of the patient. He then applied a small pad of sterile gauze. He did not use collodion or bandage. The patient was allowed to remain in the reclining position for half an hour, after which the gauze was removed. The operation was painless and an anesthetic was not required. Szurek washed the skin with soap, ether

and bichloride solution. He did not use iodine because it sometimes produced eczema of the skin. He always carefully boiled the needle before each puncture. He never failed to make a preliminary exploratory puncture in order to obtain pleuritic fluid for microscopic examination. Taussig painted the surface of the skin with iodine and used an antitoxin syringe with rather large needle.

It is well in every case to adhere closely to the usual aseptic régimé in the preparation of the syringe and needle which is used for the puncture. I usually employ a 10 c.c. all glass syringe and plunger or a Potain aspirator which is carefully sterilized before the patient is prepared for puncture. The patient is then directed to assume the same position that is employed in thoracentesis, namely, seated, and with the arm thrown upward over the head. Iodine is applied to the skin over the subscapular area of the affected side and the needle inserted. From 2 to 10 c.c. are then withdrawn and, if perfectly clear, or even slightly hemorrhagic, from 2 to 6 c.c. are reinjected under the skin. The remainder of the fluid may be preserved for future microscopic examination or for culture experiments if this is desired. A dab of collodion is applied over the puncture wound and the patient allowed to go home, if an ambulant case. Bed patients are, of course, allowed to remain in bed propped up by pillows during the injection. In cases where the pleuritic exudate is very large and the patient is suffering acutely from the pain and dyspnoea, aspiration of from 20 to 300 c.c. to relieve the endopleural pressure and the consequent distressing symptoms, is sometimes advisable. Just before removal of the needle the latter is partly withdrawn and inserted under the skin and from 2 to 6 c.c. of the pleuritic fluid injected. A Potain aspirator may be used quite advantageously in adults, especially in those cases in which the effusion is very large.

Posology.—The amount of autoserum employed for subcutaneous injection by various observers ranges from 1 c.c. to 50 c.c. The results obtained from small doses appear to be fully as effective as those where large doses were administered. Most of the observers used from 1 to 2 c.c. and as high as 5 c.c. Gilbert, Marcou, Lambrior, Boinet and Murel, Signorino, Szurek and Tschigayeff never injected more than 2 or 3 c.c. They consider larger doses useless, and observed the best possible results with two or three injections of 2 c.c. each at intervals of two to five, days, as occasion required. In many cases one injection effected a complete cure. Breton used from 2 to 5 c.c.; Rossi and Garbarini and Parassin from 1 to 10 c.c.; Fede and Gaultier from 2 to 3 c.c. in acute forms of serofibrinous pleurisy and 4 to 5 c.c. in chronic forms; Ciauro and Costa used 5 c.c.; De Blasi used 10 c.c.; Zimmermann used 1, 2 and 5 c.c. at intervals of 2 or 3

days; Maillet withdrew 20 to 50 c.c. and reinjected from 2 to 10 c.c.; Rudisch aspirated from 30 to 65 c.c. and reinjected from 15 to 50 c.c. at longer intervals (three weeks). Eytinge and McGuire injected 20 c.c.; Chieffi administered 5 to 10 c.c. at intervals of 6 to 10 days; Brodowsky obtained equally good results with 1 to 2 c.c. as when 10 c.c. were used; Fornaseri employed from 4 to 10 c.c. In very severe cases thoracentesis combined with autoserotherapy gave splendid results.

The aspiration of a moderate amount of the pleuritic fluid, in cases with distressing symptoms, followed by a reinjection of 2 to 6 c.c. appears to me to be the most rational procedure. There is no objection to the withdrawal of 10 c.c. or more even in cases in which the symptoms are not urgent, with reinjection of a small portion of this amount under the skin. The injection of large quantities of the pleuritic effusion, in primary pleurisy at least, does not appear to have any advantage over the injection of small amounts, but a withdrawal of a limited amount of fluid (10 to 30 c.c. or more) can do no harm, and will relieve the endopleural pressure and improve the subjective symptoms promptly, while the injection of large quantities of serum in secondary pleurisies may not be without grave danger.

Jousset found that effusions from young and vigorous individuals contain from 0.5 to 1.00 gram of fibrin per liter in the early stages of pleuritis, and the presence of this large amount of fibrin is characteristic of benignity. After coagulation and aseptic collection of the serum into suitable glass ampoules the serum will be practically free of bacteria. The ampoules should then be heated for 3 days, for one hour each day, at 55 C. The dose recommended by Jousset is from 20 to 50 c.c., thus compensating the attenuation of the serum by an increase in quantity. He does not state whether he has employed this method, but contends that so long as no rule or standard of differentiation between what constitutes a severe or a mild pleurisy exists, autoserotherapy should not be employed.

Indications and contraindications for autoserum treatment.—While authors at first believed that autoserotherapy was indicated in tuberculous pleurisies only, later reports without exception confirmed its efficiency, empirically, it is true, in as great if not greater degree in nontuberculous pleurisies. (Gilbert, Fede, Iovane, Jona, Fontana, Gaultier, Zimmermann, Dodal, Signorino, Boinet and Murel, Taussig, Parassin, Chieffi, Fornaseri.) In fact, no special distinction is made by these writers between primary and secondary pleurisies. Marcou recommends autoserum inoculation in all cases of serous or hemorrhagic effusion in tuberculous pleurisy, grippal pleuro-pneumonia, typhoid pleurisy and hydrothorax due to cardiac or renal disease, while Boinet, Oddo and Murel, and Chieffi state that although the

treatment did no harm it failed to improve their cases of hydrothorax and typho-bacillosis. Although the results in hydrothorax are not encouraging, the perfect innocuity of the method permits a trial in these cases.

The only contraindication to the use of autoserum appears to be the presence of pus (empyema). Quite recently, however, Jousset reported his conclusions based on experimental work in regard to the toxicity of pleuritic fluids when injected into guinea pigs. He found that the pleuritic fluid of secondary effusions is ordinarily much more virulent than that of primary effusions, or pleurisies *a frigore;* moreover, this virulence of the secondary effusions had a constant fixity. With the feeble doses utilized in autoserotherapy (1 to 5 c.c.) tuberculization of a guinea pig occurred rarely when the fluid from a primary pleurisy was used, while the fluid from a secondary pleurisy, as a rule, caused general tuberculization. Unfortunately he failed to establish the minimum dose that will produce tuberculization. These experiments deserve consideration and should be extended further, since the results of practical application of autoserum therapy in the human being do not confirm this proclaimed toxicity of secondary effusions, for we have found that in 565 cases of pleurisy in which autoserum was used only five developed general tuberculosis, less than one per cent., and many of the cases treated were no doubt secondary pleurisies, and although the authors failed to differentiate between primary and secondary infections in the majority of instances, we know from other sources that about three-fourths of all pleurisies encountered are of tuberculous origin (Lord *et al*).

Prognosis.—The best results are to be expected in acute cases or serofibrinous pleurisy with large effusions. As these effusions form very rapidly, it is not likely that injections will be made before the effusion has attained its maximum, or, as Courmont chooses to designate it, its maturation. Courmont is of the opinion that autoserum injections are of little value prior to the full development of the effusion, on account of the absence of curative antibodies. The temperature falls with the onset of absorption of the exudate, which begins in about 24 hours or less after the injection of the autoserum, while complete absorption of the effusion and normal temperature is attained in five to eight days. (Gilbert, Jona, Marcou, Lambrior, Boinet and Murel, Weill and Mouriquand, Signorino, Parassin, Rudisch, Eytinge and McGuire, Chieffi). In chronic cases the result is less brilliant, the exudate is absorbed more slowly, requiring from twelve days to three weeks after the first injection of the pleuritic fluid. In those cases where the pleuritic patient suffers from tuberculosis also, this disease is not arrested by autoserotherapy, nor is it aggravated thereby (Marcou). This applies also to other in-

fections diseases in which pleurisy occurs (influenza, typhoid, etc.). In hydrothorax due to cardiac or renal disease the prognosis is less favorable. Moderate effusions in patients suffering from advanced tuberculosis prove refractory to this treatment.

IMMEDIATE EFFECTS OF AUTOSEROTHERAPY.

1. *General condition.*—One of the most constant and most important factors to be noted in the effects of the administration of autoserum is that *in no case did harm or injury, either local or general, follow* autoserotherapy. In a number of cases of serofibrinous pleurisy in which the pain and dyspnoea were most distressing, autoserum injections immediately modified the subjective symptoms. This was no doubt largely due to the reduction of the endopleural pressure. Marcou reported that the relief was so pronounced in a few hours in many of his cases that these patients voluntarily requested a second puncture. In some very severe cases autoserotherapy failed to give relief, however, and in these cases complementary thoracentesis gave relief. Dodal reports a transitory eruption which appeared in one of his cases the day after he had given the second injection. This was probably due to the anaphylactic action of the serum. The eruption soon disappeared, however, and the patient made a rapid recovery.

2. *Temperature.*—Gilbert, Scarpa, Tschigayeff, Landolfi, Fede, Geronzi, Gaultier, Lambrior and Parassin noted a constant rise of temperature five to eight hours after injection of autoserum in tuberculous pleurisies, but they did not observe any febrile reaction in nontuberculous cases and therefore concluded that the positive febrile reaction following autoserotherapy was diagnostic of tuberculous infection, and consequently, of prognostic value. Iovane, Ciauri, Nassetti, Fontana and Signorino observed a brief febrile reaction in many cases of tuberculous pleurisy, but not in every case, with a subsequent fall of temperature to normal. Jona and Iovane observed a febrile reaction in nontuberculous cases also. Marcou observed immediate increase of temperature of 0.2 to 0.5 C. in acute pleurisies, tuberculous and otherwise, followed by gradual drop to normal in 5 to 10 days; in subacute cases the temperature reached normal in 8 to 20 days. Breton, Rossi and Garbarini, Boinet and Murel, Chieffi and Rudisch observed no febrile reaction in their cases. We find, however, that the majority of authors who report favorably on autoserum treatment are agreed that the results detailed by Marcou, namely, a drop in temperature to normal in from 5 to 20 days, apply to most of the cases treated, and to practically all cases that were cured. Zavadski, on the other hand, emphatically stated that autoserotherapy in no way modified the progressive rise of temperature, nor did he find autoserum injections of any diagnostic value.

3. *Secretions* (Sweat, Urine, Exudate).—*a.* Sweats.—Gilbert appears to be the only one who noted this phenomenon. He observed excessive sweating in some of his cases. In those cases where it occurred, it set in a few hours after the initial rise of temperature subsequent to autoserum injection. He merely mentions the fact and offers no explanation for its occurrence. Other authors either did not observe this reaction or they failed to consider it of sufficient importance to merit mention. In view of the fact that all of Gilbert's early cases were tuberculous cases, it is not unlikely that the sweats observed by him were merely a part of the manifestation of the tuberculous infection, for it is common knowledge that excessive sweating is one of the characteristic signs of tuberculous infection.

b. Polyuria.—Polyuria was observed in the vast majority of cases treated by autoserum, and this phenomenon served in a measure as an index to the effectiveness of the injections. It was noted that in those cases in which the daily quantity was not increased no change in the pleural exudate took place, while in cases with increased micturition this was in many instances almost directly proportional to the absorption of the effusion. (Gilbert, Enriquez, Durand and Weill, Jona, Iovane, Weill and Mouriquand, Le Play, Gaultier, Marcou, Lambrior, Dodal, Dumitriu, Billet and Bressot, Boinet and Murel, Signorino, Szurek Taussig, Tschigayeff, Parassin, Maillet, Chieffi).

Lambrior reported more specific observations and noted that the urine was increased in quantity beginning with 24 hours after the first injection, increasing from an average of 900 c.c. before autoserum injection to 1,300 c.c. daily after treatment, attaining its maximum in a few days and decreasing to normal again as the amount of pleuritic fluid subsided. Jona reported increased diuresis in 13 out of 15 cases in which the urine content was studied. Boinet and Murel stated that increased diuresis did not occur in cases of pleuritic effusion until autoserotherapy was done. They cite cases where thoracentesis was done without subsequent increase in urine, yet just as soon as autoserum was injected the urine increased at once. They observed a daily increase of urine ranging from 800 to 2,000 c.c. in all of their cases treated by autoserum injections. Signorino found an increased flow of urine on the day after the injection which continued for 5 or 6 days. Szurek noted an increase in the urine in every one of his cases immediately after the first injection. In several cases the output of urine was doubled, the average increase in the quantity of urine secreted ranging from 200 to 600 c.c. per diem. Gilbert, in 1910, reported increased micturition, accompanied by profuse sweats in some cases, which ran parallel with the fall in temperature and absorption of the exudate. Tschigayeff also stated that increased diuresis after autoserum

injections was a favorable sign, pointing to rapid absorption of the pleuritic effusion. Parassin extended his observations to the study of the body weight in this connection. He found that in the beginning of the treatment with autoserum increased diuresis occurred; towards the end an increase in the body weight followed. Chieffi noted that the increased diuresis was more pronounced when large doses of autoserum (10 c.c.) were employed than in small doses of 2 to 5 c.c. His observations have not yet been confirmed.

c. Pleuritic exudate.—In his first paper on autoserotherapy Gilbert stated that ordinarily the course of pleurisy is slow and shows no sign of absorption of the pleuritic exudate before the third week of the disease, while in the cases treated by him with autoserum, a complete cure with absorption of the exudate was effected within 15 days to 3 weeks after the first injection; in his second paper, which appeared in 1910, he stated that the pleuritic effusion was rapidly and permanently absorbed within 6 to 10 days after injection of the autoserum. Breton observed complete absorption in from 7 to 36 days. Tschigayeff noted that the effusion ceased to increase immediately after the injection of the autoserum, and in the majority of cases rapid absorption of the exudate followed. In acute serofibrinous pleurisy cure was occasionally effected in less than a week, usually in 2 to 3 weeks; the earlier in the disease that the injection of autoserum was administered the more rapid was the absorption of the fluid, but cures were obtained in old chronic cases as well.

Fede recorded the fact that absorption was most rapid in acute forms of pleurisy, less so in chronic forms, and Gaultier confirmed these observations. Jona noted complete absorption in 6 to 32 days. Marcou found that complete absorption of the effusion occurred in from 5 to 20 days, depending on the duration and severity of the individual case. Lambrior obtained complete and permanent absorption of the exudate in 13 to 26 days. Billet and Bressot were successful in from 3 to 19 days. Boinet reported complete absorption of two to three liters of pleuritic fluid in 2 cases within six days after injection of autoserum. Boinet and Murel, in their reply to the argument that many cases of pleurisy with effusion recover spontaneously in 3 to 4 weeks, asserted that autoserotherapy hastened the period of recovery by at least 50 per cent. and that increased diuresis failed to occur in these cases until autoserum injections were given. Signorino observed complete absorption of the pleuritic fluid in from 8 to 21 days; Parassin obtained complete absorption usually in two weeks, and Chieffi in 16 to 24 days after autoserotherapy. The remaining observers merely stated that absorption occurred more or less rapidly, but did not specify the time required to bring this

about. Rossi and Garbarini and Le Play stated that they observed no absorption of the exudate, while Hochhaus was content with the statement that he obtained no decisive results.

4. *Body weight.*—Very few observers took advantage of the opportunity of noting the daily weights of their patients, and the importance of obtaining daily weights should not be underrated, as this is one of the main aids in noting the progress of the patient. Marcou reported that the weight is decreased from 200 to 600 grams daily, but rises again at the end of a week in all favorable cases. Tschigayeff found that decrease of body weight ran parallel to absorption of the exudate and increased diuresis; later the increase of the body weight ran parallel with the improvement of the patient. Parassin observed increase in weight towards the end of the treatment. Weill and Mouriquand reported a case, child, aged 7 years, which showed a loss of one kilo in body weight in three days after autoserum treatment, but at the end of the sixth day the loss in weight ceased. The second injection caused an additional loss of 150 grams, but was accompanied by great improvement. These are the only observations on body weight that I have found, and their number is too small and the records too indefinite to be of any special value. They serve to emphasize the need of further observations.

5. *Blood.*—Zimmermann called attention to transitory leukocytosis following autoserotherapy. In one case where he made careful blood counts he found 8,500 leukocytes before autoserum injection, which soon after the injection rose to 10,300 and fell to normal again in 24 hours. After a second injection four days later the leukocyte count rose from 7,800 to 15,000. In a recent case which I had occasion to observe through the kindness of Dr. English, a leukocyte count of 6,000 was obtained before autoserotherapy. On the day following the injection the count had risen to 11,500, but dropped again to 4,000 on the following day. Unfortunately no further counts were obtained.

REMOTE EFFECTS OF AUTOSEROTHERAPY.

General tuberculization.—A close study of the immediate effects of autoserum injections for the cure of pleuritic effusions failed to produce any evidence even remotely suggestive of any harmful or injurious results accruing from this method. The vast majority of cases showed decided improvement, and the small number not followed by recovery showed no deleterious effects in any instance. In view of the fact, however, that at least three-fourths of all primary pleurisies with effusion are tuberculous and, moreover, the knowledge that out of every ten cases of primary fibrinous or serofibrinous pleurisy, at least three or four develop pulmonary or other forms of tuberculosis within an average period of from four to six years (Lord), the pos-

sibility of inducing rapid general tuberculization by introducing the autoserum into the circulation led some of the most advanced observers to apprehend this very unfortunate occurrence; yet Gilbert, Tschigayeff, Fede, Iovane, Nassetti, Gaultier, Marcou, Boinet and Murel, Dodal, Szurek, Parassin and Chieffi unite in the assertion that autoserotherapy is a safe and efficient method of therapeusis. Marcou, in reporting on 82 cases treated by autoserotherapy stated that over one-half of this number were re-examined one, two and three years after cure, and in not one instance had general tuberculosis followed. He found that when a pleuritic patient was tuberculous the tuberculosis *was not arrested* by autoserum treatment nor was it aggravated thereby, and he concluded that autoserotherapy did not possess any specific antituberculous action. Although Marcou expressed a wholesome respect for the possible development of rapid general tuberculosis subsequent to autoserum injections, he did not observe a single case in his practice.

In commenting on the fears expressed by Marcou and others that rapid general tuberculosis *might* follow autoserotherapy, Gilbert stated that such fears were unjustified and *not based on cases.* Gilbert failed to observe it in a single instance, and he had notes of 50 cases. He did not claim that autoserotherapy exerted any specific antituberculous action in patients with tuberculous pulmonary lesions, but he called attention to the fact that none of his pleuritis cases in which the autoserum was used, and which reacted favorably, developed any tuberculous lesions subsequently, as happens so frequently in tuberculous pleurisy. The reinjection of the pleuritic exudate might not have any effect on pulmonary lesions already existing at the time of treatment, but it certainly seemed to possess an immunizing property in cases of tuberculosis not yet far advanced or still in the initial stages. Mongour and Gentes, although disappointed in their immediate results of autoserotherapy, did not observe any subsequent general tuberculization. Lambrior, however, was less fortunate than the authors above mentioned, and he reported that in his first four cases in which he employed autoserum, this treatment led to a generalization of the tuberculous process in these patients.

The literature contains many cases of tuberculosis of the lungs in the second stage, or even with initial lesions in which injections of tuberculin caused miliary tuberculosis, and Lambrior believed that general tuberculosis was caused in his cases by the introduction into the general circulation of a probably large number of tubercle bacilli and a powerful tuberculin solution contained in the pleuritic fluid. He explained the improvement observed in four other cases as being probably due to absence or rarity of tubercle bacilli and to the extreme dilution or attenua-

tion of the tuberculin in the effusion. Vieryuzhski stated that autoserotherapy was only a modified method of tuberculinotherapy and that it might have a harmful effect on the general health, but he produces no cases to confirm his fears; on the contrary he reports favorably on his 3 cases. Zavadski, who observed general tuberculosis and death in one of the 38 cases which he treated with autoserum, stated that the method had no influence on the course of pulmonary phthisis, but he advised against its use.

We note from the above that rapid general tuberculosis was observed in less than one per cent. of the cases treated with autoserum. To my mind we require more definite proof that this method of treatment was the exciting agent, than the mere fact that tuberculization occurred. General tuberculization may have been under way at the time of treatment, and it could have developed whether autoserotherapy was done or not. At any rate 5 cases of general tuberculization in over 565 reported cases of autoserotherapy is even less than the number that accrues in tuberculous pleurisy without autoserotherapy, and further study may confirm the opinion, expressed by several authorities, that the reinjection of the autoserum into the circulation exercises inhibitive or immunizing properties.

Thoracentesis versus autoserotherapy.—The authors who have used autoserum almost unanimously express a preference for this method over aspiration. Fontana is of the belief that autoserotherapy is superior to thoracentesis, and Signorino states that he employed the latter method in 5 cases on account of the urgent necessity for immediate relief of the dyspnoea, otherwise he considers autoserum injections much safer and far more effective in obtaining a cure. Eytinge and McGuire stated that repeated aspiration failed to cure their patient; whereas autoserotherapy both relieved and cured promptly. Tschigayeff reported that in some chronic cases in which autoserotherapy did not bring about any material improvement he evacuated as much of the pleuritic fluid as possible by thoracentesis and then reinjected a few cubic centimeters of the fluid under the skin with subsequent cure. Boinet and Murel reported that in several of their cases repeated aspiration of the pleuritic fluid failed to effect any cure, the fluid reformed again and again. Then autoserum injections were made with the result that the urine increased in quantity accompanied by rapid absorption of the exudate. Zimmermann combined autoserum injections with thoracentesis and aspiration of some of the pleuritic fluid with good results. Gilbert, Marcou and others of wide experience did not find it incumbent on them to resort to thoracentesis. Marcou particularly emphasized the prompt immediate relief of the pain and dyspnoea in large effusions where autoserotherapy only was resorted to, and

further stated that he had not done a single aspiration in the past four years, all of his cases having yielded promptly to autoserotherapy. Hochhaus prefers aspiration of the pleuritic exudate, but admits that thoracentesis is not without danger, while Lord recommends thoracentesis, but, in the same paragraph, points out the fatalities that have occurred during its employment. Pic does not consider autoserotherapy any better than thoracentesis, and Cantineau was convinced that autoserotherapy offered less advantages than aspiration.

One is almost overwhelmed at first by the multitudinous manifestations of apparent riotous observations presented by the different authors, but a study of the cases enables one to find a pathway out of this labyrinth of evidence. As the study of the individual case reports progressed, the perfect innocuity of autoserotherapy became more and more evident. Not a single case has been reported—excepting, of course, the 5 cases of rapid tuberculization already referred to—in which autoserotherapy did the least harm. Even the most rigorous opponents of autoserum injections concede that this is a harmless procedure, while, on the other hand, the advocates of aspiration go to considerable trouble to point out the immediate dangers of thoracentesis, as well as the remote effects, in producing pleuritic adhesions and the like. Aside from the perfect safety of autoserum injections, it is observed that these injections effected improvement and cure in most of the cases where repeated thoracentesis had utterly failed to check the reforming of the pleuritic exudate, while those cases in which a single thoracentesis brought about a cure, are conspicuous by their absence, and in the majority of instances dragged through a languid course extending for weeks and even months.

It has been noted above that autoserum injections reduced the course of the disease by at least one-half. It was further found that in those instances where thoracentesis was resorted to, in order to relieve the urgent dyspnoea, only immediate temporary improvement was obtained, to be followed again by the same distressing symptoms as soon as the fluid had had an opportunity to reform. On the other hand, when a few cubic centimeters of the pleuritic fluid were reinjected under the skin at the time of aspiration, improvement was followed by a cure in the majority of cases so treated. It must not be forgotten either that the autoserum injections practised by some of the later men employing this technic partook somewhat of the nature of a thoracentesis and autoserotherapy combined, although they erroneously described their technic as a simple autoserotherapy. The literature contains cases where 50 to 75 c.c. of pleuritic fluid were withdrawn and 2 to 10 c.c. or more reinjected. The removal of such large quantities of fluid is really aspiration and should not

be designated as simple autoserotherapy. In these cases, however, we note a repetition of the same auspicious results observed by other reporters who merely performed a strict autoserotherapy; it was only in these exceptional cases that a withdrawal of fluid combined with autoserum injections gave better results than autoserotherapy alone.

Theories of the mode of action of autoserum in pleurisy.—Gilbert, the pioneer of this method of treatment, at first (1894) was of the opinion that it was only applicable to cases of tuberculous pleurisy, believing that the pleuritic exudate contained a diluted, attenuated tuberculin. He had reached this conclusion after careful study of the research work done by Debove, Rémond and Renault in regard to the presence of tuberculin in the ascitic fluid of cases suffering from tuberculous peritonitis, and also in the effusion of pleuritic patients. In 1910, however, Gilbert expressed a different opinion. He stated then that he believed that the pleuritic effusion possessed no specific properties. He was inclined to the belief that autoserotherapy was effective by merely producing *an increased leukocytosis* which in turn multiplied the alexins in a medium richly supplied with sensitizers, and thus hindered and arrested the progress of the infection, in this way supplementing the natural methods of defense of the organism. Zimmermann (1909) also called special attention to transitory leukocytosis following injections of autoserum, and expressed the belief that this probably exerted a resorbent influence on the pleuritic exudate.

Scarpa, Arcangeli, Maragliano and Fede were agreed that in tuberculous pleurisy with effusion, the subcutaneous injection of the pleuritic fluid caused a physico-chemical action which permitted an immunizing substance to enter the circulation, this substance being antitoxic, bactericidal, analogous to Koch's tuberculin, and capable of producing specific antibodies which neutralized the virulent toxins and inhibited the invading tuberculous processes. Landolfi attributed the action of autoserotherapy to a reduction of the endopleural pressure, with consequent reduction of pressure in the lymphatic vessels. Nassetti would explain its action due to the mechanical irritation by the exploratory puncture, thus causing a process of phagocytosis in the serosa destructive to the bacilli on the one hand, and, at least in tuberculous pleurisy, by the introduction of antitoxic and bactericidal products of the tubercle bacillus into the general circulation along with the exudate. Gaultier (1909) held that possibly its action was due to the change in the endopleural pressure, as Landolfi had stated before him, or that it might be due to the formation of a specific antitoxin in the general circulation, which exerted an inhibitory influence on the exudate, or, finally, to the possible formation of specific antibodies brought about by the sudden in-

troduction into the blood of a fluid containing biologic products of tubercle bacilli. Marcou (1909) inclined to the view that the injection of the pleuritic exudate into the current circulation produces an antipleuritis which rapidly cures the pleurisy. He does not believe in its specificity against the underlying cause of the disease, such as tuberculosis, typhoid fever, etc. Tschigayeff shares the same opinion.

Zavadski (1911) was another who held that it was probable that antitoxins or antibodies were formed as a result of the reaction occasioned by the introduction of pleuritic fluid into the general circulation. Parassin (1911) considered the effect of autoserotherapy due to the action of tuberculin or the specific bodies in the serous exudate. The improvement of the patient is to be attributed to the neutralization of the freed toxins which circulate in the blood of tuberculous patients and which give rise to non-specific changes in the general condition. If Parassin's view is correct, autoserotherapy *mobilizes the normal reserve energy* of the organism which otherwise would have remained latent. The improvement in the general condition probably goes on parallel with the rise of the specific opsonic index.

It is not the purpose of this paper to enter into a discussion of the possible factors which bring about a cure in the use of autoserum, nor does it seem wise to theorize further at the present time without having had an opportunity to engage in more experimental work. It will not be amiss, however, to touch briefly upon some of the salient points which naturally arise in the employment of this therapy.

The composition of the pleuritic fluid is similar to that of blood plasma and consists of water holding in solution 60 to 70 grams of organic matter and 7 to 10 grams of salts per liter of fluid. It has been found that these dissolved chlorides, phosphates, etc., are less abundant in the pleuritic effusions of tuberculous origin than in the pleurisies of different nature. The pleuritic fluid further contains albumin, serin, nuclein, fibrin, peptones, urea, uric acid, xanthins and, rarely, glycogen. It may also contain leukocytes and red blood cells. In the majority of tuberculous cases one will also encounter tubercle bacilli and tuberculin in varying proportions. It is important to remember that the solution differs in different cases and it is not unlikely that the amount of tuberculin contained in the effusion is not the same in every patient. One effusion may contain more tuberculin than another and still possess the same cytologic formula. It is possible, therefore, that the virulence of an effusion depends on the number and the type of bacilli and the amount of tuberculin contained in the fluid. An injection of pleuritic fluid may be equivalent to an injection of unattenuated tuberculin but which may also contain tubercle bacilli. The launching of these

bacilli into the general circulation might prove disastrous, to say the least, and the few cases of general tuberculization reported were explained on this basis; on the other hand, however, the overwhelming majority of cases improved under this treatment. If we are to accept this theory as the correct one we will be forced to concede that the tuberculin in the vast majority of effusions is much attenuated and diluted and of great therapeutic value, and the bacilli, if present at all, are weakly virulent and soon succumb to the antitoxic properties circulating in the blood and lymphatics. Under such conditions autoserotherapy is practically without danger, and the results obtained from its employment should certainly encourage us to resort to it in all cases of serofibrinous effusions.

Paraskevopoulos (1911) reported a series of experiments conducted for the purpose of establishing the absence or presence of antibodies in serofibrinous effusions of pleurisy. He demonstrated conclusively that the effusions of pleuritic patients contained a higher percentage of antibodies than is found in the normal human serum of patients, for in 7 out of 10 cases the effusion showed a higher opsonic index than did the serum, and he observed also that the polynuclear cells, as well as the medium and large mononuclears, were not impaired or destroyed. From these findings Paraskevopoulos arrived at the conclusion that the antibodies of pleuritic effusions could be utilized for the treatment of general tuberculosis after first freeing the effusion of the bacilli which might be contained therein. This phase of the question, however, deserves corroboration before its practical utility can be accepted, and also opens up another field of study which is beyond the scope of this paper.

As has already been inferred above, pleuritic antitoxins are local products, and as long as the pleural walls remain impervious these cannot enter into the general circulation. Courmont stated that the pleuritic fluid of tuberculous pleurisy contains bactericides and agglutinants, and when these are injected under the skin of patients, they give rise to the production of other substances, namely, antitoxins, which act beneficently. In 1896, Courmont found that certain pleuritic fluids are anaphylactant. By injecting small doses (1 c.c.) into guinea pigs at intervals of several days he observed a toxic effect, while 20 or 30 c.c. of the same fluid injected at one time had no toxic effect whatever. This phenomenon, known as anaphylaxis, led to further experimentation, with the resultant discovery that certain pleuritic fluids are anaphylactants, while others are not so, and prove curative and perhaps vaccinant. The inoculation of anaphylactants could prove harmful, at least they would be of no benefit to the patient, while the injection of the latter is beneficent. The action of the inoculated fluid depends, according to Courmont,

on the stage of the pleuritic effusion. While the fluid is on the increase it is nonagglutinant, nonbactericidal, anaphylactant; if it is inoculated at this time there will be very little benefit derived therefrom, if any; on the other hand, if the pleurisy is improving, if it has passed the point of maturation, so to speak, the fluid exerts a most favorable action, due to the above mentioned properties, and autoserotherapy done at this time will prove most effective in bringing about a cure. Autoserum injections and puncture should therefore be done at the time when the pleurisy and serous membranes offer the maximum resistance, for the specific antibodies will be most abundant during the period of maturation.

Before summarizing conclusions I desire to append brief reports of three cases of pleurisy with effusion in which I had occasion to resort to autoserotherapy:

Case 1.—Elizabeth D., colored, female, aged 2 years. Was admitted to Dispensary of Children's Hospital July 18, 1911. Mother stated that the chief complaint was fever and dry, hard cough for about two weeks. Physical examination showed a well developed and well nourished child with fever. Eyes, ears and nose negative. Large right-sided pleural effusion extending to apex. Heart displaced to one inch to left of nipple. Liver depressed to below iliac crest. Temperature 102 F. (groin); respiration 60; pulse 150. Moderate rickets present, but fontanel closed. Pupillary and patellar reflexes present and active. Treatment: Autoserotherapy by injection of 25 minims of the pleural exudate under the skin. Mother was advised as to diet, etc., and requested to return next day with the urine that had been passed during 24 hours. She failed to do so, however, and accurate notes could therefore not be obtained. Within two weeks the entire effusion had disappeared and the child was to all appearances entirely well. I had occasion to see the child again fifteen months later and found her in excellent condition. The pleural signs were gone, no adhesions had formed, nor was there any history of any disturbance during the interval. The liver appeared normal in size and no longer depressed downward.

Case 2.—Vesti H., colored, female, aged 6 years. Referred to my clinic April 19, 1913, from the medical service under Dr. Copeland. Negative family history for tuberculosis. Had pertussis and measles before Easter when cough began and has continued since. Complains of pain in chest, night sweats and feels tired all the time. Physical examination of chest showed flatness over base of both lungs extending to 4th interspace on right side; breath sounds absent over area involved; râles over both apices and middle of lung; tubular breathing over entire left lung. Temperature 103 F.; respiration 70; pulse 150. Diagnosis: Tuberculous pleurisy with effusion. Autoserotherapy of

3 c.c. of pleuritic fluid. X-ray plate made April 21, 1913, confirmed diagnosis of pleurisy and revealed general miliary tuberculosis. Thoracentesis and withdrawal of 3 ounces of fluid and reinjection of 2 c.c. Child did not improve and on April 23, 10 ounces of fluid were aspirated, with reinjection of 2 c.c. The effusion was now rapidly absorbed within two weeks, but the tuberculous process did not improve and patient died May 17, 1913.

Case 3.—C. C., white, male, aged 36, was exposed to a draught on March 4, 1913, Inauguration Day, and developed symptoms of influenza for which he was promptly treated and recovered. About a month later he had a second attack, received similar treatment and improved, but was conscious of a slight sense of restriction in left side of thorax. On examination April 12, pleurisy with effusion was diagnosed and confirmed by Roentgen ray. Pain and dyspnea had become much more intense. The fluid was confined to the left side and extended as high as 4th rib, and displaced the heart considerably to the right. April 20, thoracentesis with withdrawal of 180 c.c. of fluid and autoserotherapy of 3 c.c. of the pleuritic fluid. Owing to breakage of syringe no more fluid could be withdrawn at this time. The temperature fell from 100 F. to 98.6 F. within 48 hours and the urine almost doubled in quantity. The general condition of the patient improved and the pain and dyspnea lessened. April 23, 420 c.c. of clear fluid were aspirated and 3 c.c. of the fluid reinjected. Improvement was rapid and patient was well in ten days with no recurrence of the effusion to date.

CONCLUSIONS.

1. Autoserotherapy is a reliable and safe method of treatment for all forms of serofibrinous pleurisy and should be employed in every case where pyemic infection is absent. A positive cure may be expected in over 80 per cent. of cases.

2. In secondary pleurisies autoserotherapy may not exert any beneficial effect on the primary cause of disease. It will merely cause rapid absorption of the pleuritic fluid, however, and in incipient tuberculous conditions has been known to arrest the progress of this disease.

3. In large effusions causing severe dyspnea and pain it is advisable to aspirate from 10 to 200 c.c. of fluid and before withdrawing the needle entirely to reinject 2 to 3 c.c. under the skin of the patient. The result will be immediate relief from subjective symptoms and more rapid absorption of the exudate.

4. Autoserum injections should be repeated every other day until decided improvement follows. It is advisable to employ

small doses from 2 to 3 c.c. only, as most authors have had the best results with this dose, and larger doses may not be without danger.

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Dr. A. F. A. King was unable to discuss the subject from the standpoint of experience with the method, but he wished to commend the very elaborate paper which had been presented by Dr. Pfender. He wished to ask one question: Dr. Pfender had made the statement that 80 per cent. of the cases had been cured by autoserotherapy; are there any statistics to show that 80 per cent. of the cases not so treated will not also recover? Dr. King remembered reading some years ago a paper giving a list of cases all of which had been treated by aspiration and all of which recovered.

Dr. Roy thanked Dr. Pfender for the paper. It seemed to Dr. Roy that the results obtained by Dr. Pfender are not obtainable by the use of the ordinary methods of treatment. It was interesting to note the increase of urinary output after autoserotherapy. Dr. Roy had often made the clinical observation that the urinary output is small in pleurisy with effusion, and that the effusion will not diminish until the urinary excretion is increased. He remarked upon the apparent relation between pleurisy and the beginnings of pulmonary tuberculosis.

Dr. G. Wythe Cook inquired whether the serum acts directly upon the kidneys or whether it stimulates absorption. What is the theory of its action?

Dr. Randolph said that thanks were due Dr. Pfender for presenting this method of therapy. It must be remembered though that every new method of treatment comes before us with laudatory reports, and it is natural that physicians should ask to be shown. He hoped that Dr. Pfender would soon be able to present more personal experiences and observations. Dr. King's remark upon the lack of controls should be emphasized. Is the mode of action of the autoserum thus used purely eliminative, antitoxic or does it act by way of local irritation? Dr. Randolph remembered that, when an interne in a hospital, he had been directed to aspirate a knee which was the seat of an old lesion with effusion into the joint; he failed to draw any fluid, but the effusion promptly disappeared. He was astonished to hear of the ability to diagnose miliary tuberculosis by means of the x-ray; he would not think it possible. And in this connection it seemed to him that we must be guaranteed of the safety of using serum obtained directly from the patient's chest; we know that some of these pleural fluids will cause tuberculosis when injected into animals, and risk may be incurred of transforming a local infection into a general one. He inquired if Dr. Pfender had seen recent articles describing a method of autodrainage for the relief of ascites. It seemed to Dr. Randolph not likely that it would be possible to drain so much fluid into the muscles, and that there might be some similar reaction to that operating in the autoserotherapy described by Dr. Pfender.

Dr. Macatee said that it seemed most likely that the reaction produced by injecting into the tissues the serum withdrawn from the pleural cavity, is a biological phenomenon involving those little known chemical changes which we recognize as toxic, antitoxic, or immune reactions. Possibly the serum may act in some such way as the hormones.

Dr. Carr said that the idea seems to have been prevalent that most of the simple pleurisies are tuberculous at bottom. He had seen many such cases, but he had not observed any of them to become tuberculous and they all got well. It should go without saying, that if there should be any pus in the fluid aspirated, the patients would do badly when reinjected. Certainly the paper showed that the method advocated by Dr. Pfender is used by men high in authority.

Dr. Pfender said that the paper was so voluminous that he could not read it in its entirety; as he had remarked, it was based upon the entire literature of the subject. As to the proportion of cures: a certain percentage of pleurisies will get well any way; another percentage will get well after being sick for six

months or more, with possible complications; with autoserotherapy, they will get well in from three days to three weeks and without complications. The statistics show that autoserotherapy produces better results than simple thoracentesis. As to the way in which the autoserum acts, there are a number of theories afloat. The general opinion is that the pleural effusion is a fluid cut off from the general body juices, and that anything that will get this fluid into the circulation will in some way stimulate absorption of the exudate; whether the reaction is similar to biologic phenomena produced by bacterial products is not known, but it probably is. The danger of general tuberculization by the use of this method must be recognized; such an event has not yet, however, been demonstrated. The x-ray will show the presence of tuberculosis and thus put us on guard; the presence of pus may also be detected thus. The method has been used little in this country, but he hoped it might be used more.

"CHRONIC IRRITATION" AND "FERTILIZATION OF EPITHELIAL CELLS BY SPERM"—THE CONJOINT CAUSES OF CANCER.*

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The first paper I presented to the Society on this subject, a year ago (Washington Medical Annals, January, 1913), did not elicit very much discussion. Perhaps it was not understood or, possibly, it may have been considered too preposterous to deserve consideration. In discussing the matter personally, however, with friends, one of them expressed the opinion that the spermatozoon was a too highly specialized organism to do anything else besides the fertilization of ovules (*germinal* epithelial cells), for which it was naturally designed. He was unwilling to admit that it would penetrate *somatic* epithelial cells.

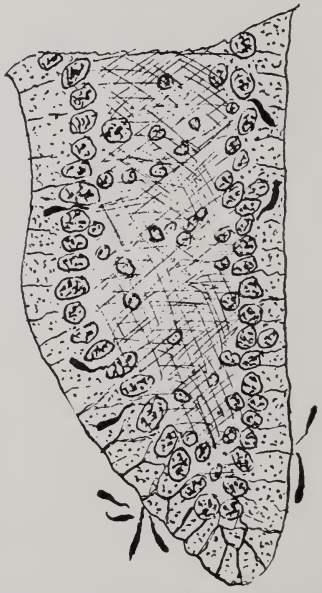
It is with some pleasure, therefore, that I am now able to show copies of the illustrations accompanying the recent publication of Dr. J. F. H. Köhlbrugge, of Utrecht,† on "*Verbreitung der Spermatozoiden im weiblichen Körper und im befructeten Ei*" (*Archiv. fur Entwickelungsmechan,* vol. 35, 1912–1913, p. 165 *et seq.*), (See also *Jour. A. M. A.,* Sept. 20, 1913, p. 966), in which he has depicted spermatozoa penetrating the epithelial cells

* Read before the Medical Society of the District of Columbia, February 11, 1913.

† According to G. C. Nijhoff ("*De beteekenis van het overtollige sperma voor de vrucht*"), "Spermatozoa have been seen to work their way into the mammalian ovum after the second, sixth and even eighth divisions." *Jour. A. M. A.,* Feb. 21, 1914. p. 658.

of the genital tract in several different organisms. I here reproduce four of his illustrations showing: Spermatozoa entering cells of the mucosa; in the uterine mucous follicles of the field-mouse; in the oviduct of the chick; in the tubal mucosa of the mouse; and sperm embedded in the epithelial cells of the uterine mucosa of a dog, thirty hours after coition. His publication contains a number of other illustrations of the same sort.

Spermatozoa in Epithelial Cells of Oviduct of Field-Mouse.



Same in Uterine Mucosa of dog.

Should the observations of Köhlbrugge be confirmed, we shall have to change a good many of our ideas as to the powers of the spermatozoon and its activities. An editorial on this matter in the *Jour. A. M. A.* (Sept. 20, 1913, p. 966) reads as follows: "The cells of the uterine mucosa that have been entered by the sperm seem to be stimulated to growth, indicating that this may

SPERM PENETRATING EPITHELIAL CELLS IN OVIDUCT OF CHICKEN.

TUBAL MUCOSA OF MOUSE.

be a factor in the preparation of the mucosa for the embedding of the egg and the formation of the decidua. It is also possible that these foreign cells entering the tissues may lead to immunologic reactions of significance," etc., etc.

With regard to the spermatic element as a contributive factor in the production of cancer (which we are now considering) it will perhaps be asked: Why do not the epithelial cells that have been penetrated by spermatozoa develop into cancer? If they did, and if Köhlbrugge's observations be correct, we should *all* have cancer. But they do not. No. We must not overlook that the theory for which I am contending calls for *two* factors, viz: first the transformation of *normal* epithelial cells into *ab*normal ones by "continued irritation"—these abnormal cells being in fact somatic cells that have been changed into *quasi* germinal cells, by the reduction of their chromosomes. It is when the sperm elements enter *these,* that the pseudo-embryonic development of cancer begins. The entrance of spermatozoa into and through, *normal* epithelial cells does *not* probably produce cancer.

It is said the ovaries of every normal woman contain together about 60,000 ovules.

If we ask why she does not have 60,000 pregnancies, the answer is, because it is only the *maturated* ovule with reduced chromosomes (appearing once a month) with which the spermatozoon is supposed to conjugate. Even if it *did* enter the *un*maturated germ cell, the probability is no consequent embryonic development would take place. Should it be otherwise, the Mendelian law of heredity would be rendered wofully inoperative and there would no longer be any such thing as persistence of type, but, on the contrary, a mixed offspring of, perhaps, untypical teratomatous monstrosities, against which Nature, seemingly, has provided by restricting impregnation to "maturated" cells.

According to my view the ideal conditions for the production of cancer, say, for example, in a cervix uteri, would be as follows: given a woman who has had, for a long time, chronic endocervicitis perhaps with so-called "ulceration," let her marry and have children, with repeated lacerations, erosions, and cicatrizations of the cervix. Let us suppose she becomes a widow, and after her "change of life" marries a *young* and vigorous man.

Assuming the connubial relations to occur with the frequency common to vigorous men, the two conditions of "chronic irritation" and "spermatic fertilization" would both be present in a pronounced degree. Are women in whom these hypothetical conditions prevail found to be specially liable to uterine cancer? Statistics furnish no reply; especially are they deficient with regard to the *age* and *potency* of the second husband—a factor, however, which, in further records ought not, I think, to be overlooked.

A good many diseases arise from violation of Nature's laws. Hence I repeat what I have said in another paper, viz: if young men will so far ignore the natural law of "sexual selection" as to ally themselves with women in the "sere and yellow leaf" of existence, the hieroglyphic lines upon whose wrinkled features distinctly proclaim the warning: "*Reproductive department permanently closed,*" then it need not surprise us to find the offspring of such abnormal alliances should sometimes be cancers instead of children.

If we could only enlist the interest and coöperation of some of our "Cancer Research Institutions," it is possible the experimental production of cancer could be accomplished in the following manner: Let a small wound be made—either by mechanical, chemical or thermal means—on the skin of, say, a dozen rabbits or some other animals, and as the wounds are beginning to heal, let them be kept open by curetting, or heat, or caustics, for some weeks or perhaps months; then to six of the wounds apply fresh sperm from vigorous males; while the other six receive *no* sperm. We should expect cancer cells to appear in those only to which the spermatic fluid had been applied.

NO NERVE-GOVERNMENT IN CANCER.

For a long time, through all the literature of cancer, there is one idea that has persistently prevailed, and which, I think, has never been disputed, viz: the idea that cancer is a sort of foreign, independent, rebellious growth, the cancer cells being strangers, rebels, invaders, traitors, running riot in the organism; a histological mob, each cell pursuing its independent development regardless of law and order; a sort of cell confederacy, or principality, trying to establish itself in a region where it has no legal (physiological) right to appear. And still again, it is a confederacy, in which numerous *sub*confederacies are continually arising and contending with each other. There is no benign or united effort for the general good of the organic community, but, on the contrary, a lawless fratricidal struggle, each colony of cells being, so to speak, at war with neighboring colonies, with consequent death and destruction to all. When one "epithelial nest" of disloyal cells spreads its domain until it invades the territory of other similar nests, then come contention and degeneration of the lawless histological hordes of independent cells. They destroy each other.

The principal explanation of this useless, reckless and riotous conduct on the part of the individual cell-units, and which seems to be generally admitted, is *lack of nerve control;* absence of *nerve-government.* Our esteemed ex-president, Dr. William P. Carr, in his recent "Study of the Cancer Situation" * * *

(*Surgery, Gynecology and Obstetrics,* Chicago, October, 1913, pp. 490–495), has forcibly elaborated this idea. After stating that normally each epithelial cell is under nerve influence and control, he asks: "What should we expect of a cell suddenly deprived of this control?" And he replies: "Naturally it would become an independent organism, a foreign body in the animal to which it belonged. It would revert to its ancestral type and become an embryonal cell," etc., etc.

One recent writer in discussing this matter (Dr. H. D. McCulloch, in *Brit. Med. Jour.,* Sept. 24, 1910, p. 913,) makes a most remarkable statement, and one which seems to explain the hitherto rather inexplicable fact, that x-rays sometimes produce cancer and sometimes cure it. After referring to the *de*nervation (the *destruction* of nerve control) produced by mechanical, chemical and thermic agents, he goes on to say that "*de*nervation produced by x-rays is different from that produced by chemical, mechanical and thermic agents. Cancer by x-rays can be produced on any normal tissue, but not on scar tissue and abnormal areas; on these last, x-rays produce an opposite effect: they produce a reinnervation of such areas." I have not yet examined the data on which this statement is based, but he refers to a former article of his in the *Brit. Med. Jour.* for August 27, 1910, p. 524, in which presumably it is explained. However, we observe it falls in line with the general fact of deficient, or absent, nerve control being a characteristic phenomenon of cancer.

Now let us see how far these facts agree with my hypothesis that cancer comes from the fertilization of maturated epithelial cells by spermatozoa. In order that we may understand each other, it is absolutely necessary to get rid of the idea (which seems to predominate in the minds of some with whom I have discussed the matter), viz: the idea that in this fertilization of epithelial cells only *one cell* is fertilized—like the *one* fertilized germ-cell of a normal pregnancy. On the contrary, the number must, of necessity, be hundreds or thousands, possibly millions. When we *see* an eroded or "ulcerated" surface on a cervix uteri, for example, it cannot be otherwise than that this surface, visible to the naked eye, must be composed of a *great multitude* of abnormally maturated epithelial cells liable to spermatic fecundation.

That is to say if *one* has been produced the same abnormal conditions that produced the one will have produced a great number of others. Now add the sperm, and hundreds or thousands of epithelia may be simultaneously or successively fertilized, and each one will begin the process of segmentation and the futile effort of embryonic development. But each of these segmenting fertilized cells is beginning to form and establish an *independent* colony of cell-units, quite regardless of any law gov-

erning the domain of the larger organism in which it has gained a foothold. *This is cancer.* Like most other pathological formations it has its physiological prototype, which we find in the segmentation of a normally placed impregnated ovum. It scarcely seems necessary to account for the embryonic cells of cancer, by assuming that they are the result of *reversion* to ancestral conditions.

Can those who adopt this view give any decisive facts in its support; any *more decisive* ones than those which indicate the development of segmentation spheres, *de novo,* from freshly fertilized epithelial cells? We can all appreciate embryonic *ev*olution, but embryonic *in*volution seems unthinkable. True, the old epithelial cells on mucous and cutaneous surfaces are constantly being thrown off, while new ones replace them from below. But the old cell never becomes a young one. The morula never goes back to become a one-celled ovum. Carried to an extreme this embryonic reversion concept would seem to imply the possibility of the butterfly reverting to its larva, or the chick reverting to the egg. The cell units produced by the segmentation of a fertilized epithelial cell may, indeed, be likened to Protozoa—the ancestral forms, from which all higher organisms were derived, but these are *de novo* cells due to *reproduction,* not to embryonic *in*volution.

Dr. Gould in his Bradshaw Lecture (*Brit. Med. Jour.,* Dec. 10, 1910, page 1840), declares that it is no longer possible to see in cancer, a *reversion* to the embryonic type of growth. And other writers coincide.

May we not then eliminate the *reversion* concept, and squarely admit that the embryonic phases of cell-life, as exhibited in cancer, are best explained by the fertilization of epithelial cells and their consequent segmentation, etc.?

With regard to the lack of nerve-control in a cancer as compared with the nerve-regulation of growth in a normal embryo, we note that in an embryo the formation of a medullary canal with its contained central nervous system is one of the very early formations of the ectoderm; by which it may be presumed the formative energies of the growing ovum are directed and governed. But early as this may be in a single and normal embryonic evolution, it is scarcely supposable that the spurious and aberrant formations of cancer can ever progress far enough in their abortive embryonic evolution to produce anything resembling even the most primitive nervous system. In fact we know they do not, and cannot. Each cell, derived from the original one by segmentation, does, indeed have its own independent nerve center—namely, its nucleus,—and perhaps the combination of cellular units resulting from the first few divisions and subdivisions may work in unison, just as the segmentation

spheres of an early ovum do, before the formation of the medullary tube and its contents. But before any structural formation preparatory to nerve government, like that of a normal embryo, can occur in cancer, the "thousand and one" "individual" groups of cells resulting from the "thousand and one" fertilized cells undergoing segmentation, will necessarily come in contact and contend with each other; each independent colony struggling with adjacent colonies and a consequent interruption, degeneration and partial destruction of the contending factions. It is needless to add the numerous other destructive elements that necessarily combine to render the *quasi* embryologic evolution in cancer abortive.

CANCER OF THE STOMACH.

With regard to "*continued irritation*" and "*spermatic infection*" as conjoint etiological factors in gastric cancer, it is, I think, universally acknowledged that in the large majority of cases—if not in all—cancer of the stomach is preceded by *ulcer* of the organ. Chronic ulceration, then, provides the first factor of "*continued irritation;*" but against the idea of the proliferated cells resulting from this irritation being fertilized by spermatic elements, it is urged that the acid gastric juice would kill the spermatozoa or destroy their fertilizing power. At first sight this seems to be a very proper and reasonable assumption, but it is only partially correct. Spermatozoa may *sometimes* be destroyed by the gastric acids, but not *always*. Very often the victim of gastric ulcer takes sufficient quantities of alkaline salts (soda, magnesia, lime, etc.), thus relieving "heartburn" and hyperacidity, to render the gastric contents decidedly—although perhaps temporarily—alkaline. But, now I want to accentuate that these *temporary* periods of alkalinity, perhaps of several hours' duration, are amply sufficient to permit the fertilization of epithelial cells by sperm and the beginning of a cancerous growth. Note, too, that the activities of the spermatozoa are *increased* by alkalies.

Is it true, or is it likely, that a *few hours* would *really* suffice for the fertilization of epithelial cells and for the commencement of a *quasi* embryonic development, by their segmentation, etc., resembling that of a fertilized ovum, in some degree? From the recent experiments of Jacques Loeb ("*The Mechanistic Conception of Life,*" 1912) and others, in observing the processes of cell fertilization, segmentation, and embryological development, *in vitro,* there seems to be every reason for an *affirmative* reply to this question—surely there is nothing in their experiments and conclusions to warrant an unconditional *negative* answer to it. Loeb gives us illustrations showing that after fertilization of the sea-urchin egg by spermatozoa, visible changes occur almost

instantly, and the fertilized egg actually goes through its first segmentation, resulting in the formation of two cells "in one minute or less time" (page 9, figures 3, 4, 5). Further segmentations occur at intervals of from one to three minutes. Taking the longer period of three minutes would give us 20 subdivisions in *one hour,* with a consequent production in that time, or 524,288, in *two* hours 549,756,133,988 cells. Furthermore, it is hardly supposable that in a *visible* ulcerative surface only *one* cell should be fertilized; more likely the number would be thousands or millions. Some of these cells may degenerate and die; but others may survive and develop into the pseudo-embryonic structure we call "cancer." And again, the conditions that led to *one* fertilization may be repeated over and over again during the weeks, months or years that sometimes elapse before gastric *ulcer* becomes gastric *cancer.*

The rapidity of cell division after fertilization should not surprise us, when we recall the transmutations by which an egg becomes a chicken in twenty-one days, and also that within the first twenty-seven hours of incubation the chick has bloodvessels and visible lines indicating the vertebrae of its spinal column.

In *Amphioxus* (a fish-like organism) the conjugation of ova with sperm-cells always occurs at a definite hour (5 to 7 P. M.), but eight hours later (from 4 to 5 next morning,) the embryo is an independent individual, swimming about in the water by the waving of cilia on its ectodermal cells. (See Willey on "*Amphioxus and the Ancestry of the Vertebrates,*" pp. 105–113.)

Montrose T. Burrows, in his paper on "*Tissue Culture as a physiological method*" (Trans. Congress Amer. Phys. & Surg., May, 1913, p. 81), says, "The most active reproduction is seen in cultures of malignant tumors and embryonic tissues." Here again we note, not only a demonstration of the extraordinary rapdity with which cancer cells grow, but again there appears the ever-recurring resemblance between *cancer* tissues and *embryonic* tissues. To those of us who have not kept pace with the work of Carrell, Loeb, Harrison, Burrows, Lambert and others in their cultivation of tissue cells *in vitro,* the results are so startling as to seem almost incredible. Even such highly specialized structures as nerve fibers have been seen to grow, extending their branches over the field of the microscope hour by hour, almost minute by minute. In the volume of Transactions, just mentioned, the beautiful illustrations showing these processes inspire us with surprise and admiration—almost with awe.

With these facts before us, does it not seem probable that a *few hours of alkalinity* in a human stomach may be long enough to permit fertilization of proliferated epithelial cells on an ulcerated surface by spermatozoa, and the consequent beginning of a malignant growth?

It would certainly not be fair to conclude that such a process was *impossible;* even though the combination of circumstances leading to it might be *rare.*

In conclusion, it may be supposed that this etiology of gastric cancer would imply some sort of moral delinquency on the part of those afflicted with the disease. *Not at all.* In my former paper special pains were taken to explain how spermatic elements may be distributed through a household, very much (but not exactly) in the same manner as the infecting microbes of typhoid fever, tubercle and diphtheria are.

And again while spermatic fecundation may be *one* of the means by which maturated epithelial cells are made to initiate the pseudo-embryonic growth we call cancer, it may not be the *only* one.

Thanks to the experiments of Loeb, Lillie, Mathews, Shearer, Warburg and others "the complete imitation of the developmental effect of the spermatozoon by certain physico-chemical agencies has been accomplished ("Mechanistic Conception of Life," Loeb, p. 11); but because this fertilizing process can be imitated artificially in the laboratory, in no way detracts from the fertilizing power of the spermatozoon, nor does it in any degree lessen the value of the prophylactic injunction, that ulcers of the stomach—like other chronic lesions—should be protected as far as possible, from contact with spermatic elements.

Apropos of this matter I may here repeat the ideas of an anonymous writer in a secular periodical, signing himself "*Osculator.*" I have modified his language somewhat and have added the last four lines, thus:—

"The microbes that I gather
From the lips of Mary Ann,
I transfer to a new abode
By simply kissing Fan;
And then from Fan to Jennie,
From Jennie on to Joe,
We keep the little microbes
For ever on the go."

But surely Joe is not to blame,
Because *his* case began
With the guilty "Osculator"
Who first kissed Mary Ann.

KANGRI–BURN CANCER.

Our modern knowledge of this disease is derived chiefly from the writings of Dr. Ernest F. Neve and Dr. Arthur Neve, of Kashmir.

It is described as a squamous-celled epithelioma of the skin, identical in structure with epithelioma occurring in other situations, such as the lip or scrotum (*Indian Med. Gazette,* xxxv, March, 1900, pp. 81, 83). The bulk of the growth consists of "mottled red and grey *embryonic tissue* with a scaffolding of fibrous tissue and numerous bloodvessels" (*Brit. Med. Jour.,* Sept. 3, 1910, p. 590), and abundant "cell nests," etc. During the ulceration and sloughing stages, bloodvessels are sometimes perforated, with fatal hemorrhage. The adjacent lymph glands become similarly affected. With these phenomena of cancer we are all familiar.

The prevalence of the disease among the people of Kashmir is caused by their wearing a so-called "Kangri-fire basket," (a brazier containing burning charcoal) over the lower part of the abdomen; thus burns of the skin occur, and are repeated, until eventually the long-continued "irritation" goes on to ulceration and the development of kangri cancer. Of 486 epithelial cancers treated at the Mission Hospitals of Kashmir during the decade 1890–1899 (inclusive) the number of kangri-burn cases was 363 —about three-fourths of the whole number.

With regard to the two factors, 1st, "*continued irritation,*" and, 2d, "*spermatic infection,*" which I maintain produce cancer, we here certainly have the *first* one—the continued irritation produced by heat—without any doubt. But do we also have the second one, viz: fertilization of the rapidly proliferating epithelial cells by spermatozoa? Here it may be noted that the disease is not confined to the abdomen; "the commonest sites are the inner surface of the thighs, or the front of the abdomen any where between the pubis and sternum" (*Indian Medical Gazette,* May, 1902, p. 165, E. F. Neve.)

We may certainly note that these regions of the body (like the scrotum of chimney sweeps) are more liable to be polluted with sperm contamination than dorsal or other regions farther removed from the genitalia. If these people had worn their fire-baskets between the scapula or on the back of the neck, would the kangri-cancer have occurred with equal frequency? This question cannot be answered. But the part played by spermatic infection, as a contributive etiological factor, may possibly be partially revealed by the relative frequency of the disease in persons who are relatively more exposed to spermatic contamination. Thus, in accordance with my theory, other things being equal, the kangri cancer cases should occur with *least* frequency in *single women;* while males and married women would be more liable to it. On examining the available literature on this point, we find, from a report by Dr. Ernest F. Neve (*Brit. Med. Jour.,* Sept. 3, 1910, p. 589), that in a series of 848 cases at the Kashmir Mission Hospital, "the disease is *twice as common* in men

as in women," and in another report by Dr. Arthur Neve, he writes (*Indian Medical Gazette,* vol. xxxv, March, 1900, p. 81), "most cases are males—fifteen out of twenty." Dr. Neve further states that "during the severe winters every man, woman and child carries a charcoal brazier under the loose gown which constitutes his or her only garment." When walking, this hangs against the abdomen, when seated it is placed on the ground between the thighs.

Thus then, since all alike wear the kangri basket, and most of them have burns, the greater prevalence of the cancer cases in *males* would seem to support our suspicion of spermatic infection being one of the causative factors. In India, however, owing to a great prejudice against women entering hospitals, more males than females are admitted. Whether this preponderance of males, in the general admissions, is sufficient to account for the larger number of kangri-cancer cases in men must be considered, before concluding positively, that the disease is more common in males than females.

So far I have not been able to find any statement as to the relative number of kangri-cancer cases in single and married women; but I have written to Dr. E. F. Neve, asking for information on this point. If my view of the matter be correct, we may predict that virgins will be least liable to the disease.

SYNCYTIOMA MALIGNUM.

In accordance with the view for which we are here contending, viz: that cancer cells originate in the segmentation of a fertilized *somatic* epithelium cell (the process being an abortive imitation of the segmentation observed in a *germinal* epithelial cell after fertilization), we must note that very early in normal pregnancy, when the segmentation cells have arranged themselves into a globular lamina—constituting the so-called "blasto-dermic vesicle"—only a very small part of this little globe (about one-eighth of it) is destined to form the actual *body* of the embryo; the other seven-eighths of it (the *non*-embryonic area) go to form the embryonic appendages, that is, the chorion and placenta. Thus, then, we ought to find in a developing cancer, not only cells representing abortive *embryonic body* structures, but also cells representing abortive *placental* (or chorionic) structures. *Do* we meet with such abortive placental formations in cancer? In reply, I quote from Dr. N. Roger Williams' treatise on the "*Natural History of Cancer,*" p. 443. He says: "It is a curious fact, that in the phases of placentation" (he means, that is, the different stages in the development of a placenta) "all the phenomena of malignancy find their counterparts. Pathologists have often remarked on the similarity between the early stages

of placental formation—when the maternal tissues are invaded and interpenetrated by foreign epithelial ingrowths—and the cancer process; and, by some, the placenta itself has been regarded as a kind of 'physiological tumor.'"

It is about twenty years ago since Schmorl and Veit demonstrated the now well-known fact, that in the majority of normal pregnancies, fragments of chorionic villi, and the syncytial cells covering them, are constantly getting into the blood and being deported to all parts of the body in the circulation. But the reason why these deported fragments do not become arrested and develop into cancer is because they are destroyed and digested by specific protective ferments, as shown by Abderhalden and numerous other observers (See *Amer. Jour. of Obstet.*, January, 1914, pp. 54–72, article by Henry Schwarz on the "*Serology of Pregnancy and Cancer*"). When, however, these syncytial and chorionic fragments enter the blood in more than usual quantities, or when for some reason the protective ferments are insufficient to cope with them, then we *do* have cancer—cancer in its most rapidly fatal form—viz: syncytioma malignum or chorion-epithelioma that so frequently follows hydatidiform or molar pregnancies. But let us not fail to accentuate that here again the deported fragments were broken off from an embryonic structure which had its real origin in the fertilization of a germinal epithelium cell by a spermatozoon a few weeks before.

CANCER OF THE TESTICLE.

This must not be confounded, of course, with "Chimney Sweeps' Cancer," which is cancer of the skin of the scrotum—a very different thing.

A most elaborate and comprehensive study of cancer of the testicle has recently been made by Dr. James Ewing, Professor of Pathology in Cornell University Medical College ("*Surgery, Gynecology and Obstetrics,*" Chicago, March, 1911, pp. 230–261). He seems to have put together and analyzed, in a truly scientific and impartial manner, the world's knowledge on this subject, gathered from no less than 169 publications, as shown by his list of "references." We cannot do better, I think, than adopt his own conclusion with regard to the origin of these cancerous growths. His conclusion is that they are teratomatous growths; that they consist of aberrant and abortive displaced embryonic fragments that were born with the individual, and which usually remain dormant in the testicle until excited by some sort of "irritation" (generally trauma) to take on the exuberant and destructive growth we call cancer. He discusses the question as to whether the growths arise from a displaced "segmentation sphere," "isolated blastomere," or from the fertilization of an

extruded "polar globule," which last, we know, does sometimes attempt an abortive embryonic development, and other theories.

However this may be, it is enough for our present purpose to briefly accentuate the fact that the embryonic structure from which the fragment was dislodged had itself been produced a short time before by the fertilization of a germinal epithelial cell by spermatozoa. In what other way could an *embryonic* fragment have naturally originated?

These cancerous growths of the testicle are much more *rare* than the common forms of carcinoma which we have been considering; and consequently it is not surprising to find they have a somewhat different origin; but, different as it is, we can still trace it back to the same initial process as in other cancers, viz: the fertilization of an epithelial cell by sperm.

BILHARZIAN CANCER.

This disease was first explained, in 1852, by Bilharz, after whom it was named. It prevails especially in Egypt and Abyssinia; it is said 30 per cent. of the Egyptians are more or less affected with it. It is unknown in the United States, I believe.

It occurs chiefly in the bladder and rectum, but also affects the kidney, ureter, intestine, and other organs. Most of the cases do not *begin* as cancer, but become so later on. Adami says: "numerous cases are on record in which the condition of chronic proliferative inflammation has given place to definitely cancerous growths," leading to "an aberrant progressive and excessive tissue growth with the proliferation of atypical tissue cells invading the surrounding tissues and, indeed, capable of forming metastases" (*Adami's Principles of Pathol.*, v. 1, p. 717).

In fact, in bad cases, the disease re-enacts every part of the drama of carcinoma. There are the same *dramatis personæ*, if I may so speak, *i. e.*, the same lawless, independent, rebellious cell-units, leading their own life at the expense of the human host in whom they have gained a foothold; there is the same degeneration, ulceration, and destruction of surrounding tissues; the same involvment of bloodvessels and consequent hemorrhage; and the process ends with the same tragic culmination—the death of the human host.

Thus it has been called "Cancer."

But while it has certainly *not* originated in the fertilization of a human epithelial cell by a human spermatozoon, and is *not*, therefore, in any sense, a specimen of abortive human embryonic evolution, as in the other cancers we have considered, yet it is nevertheless an example of *real* embryonic evolution of *another kind*, viz: the embryonic development of the fertilized epithelial germ cells of a foreign invader, the *schistosoma hematobium*—a nematode worm—a parasite.

While this Bilharziasis disease, as it is called, seems to be an exceptional affair, different from other cancers, it is an exception that helps to prove the rule that these other cancers (like itself) have their origin in the embryonic development following the fertilization of epithelial cells by sperm.

CANCER OF THE RECTUM.

There are two ideas intimately woven into the fabric of cancer literature; first, the idea that the real cause of cancer is in some way concealed behind a veil of secrecy; second, that there is some intimate relation between cancer and the reproductive system—the sexual system. Hence the combination: sex, secrecy, cancer.

Williams (*Natural History of Cancer,* p. 327) remarks: "In spite of a few exceptional cases, it may be safely asserted that under the age of puberty—before *sexual* maturity—cancer is practically unknown." The earliest case recorded is that of a girl, eleven years old, with cancer of the rectum. "The rectum," Dr. Williams tells us, "is *remarkable* for the comparatively large number of malignant epithelial tumors, that arise from it during *early* life," especially in boys. He then mentions two cases, reported respectively by Milne and Allingham, in boys of twelve; one at thirteen by Czerny, and Michaux; at fifteen, by Godin; at sixteen, by Lazarus-Barlow; at seventeen, cases by Schoening, Cripps, and others. "At later periods, *under twenty,* the recorded cases are so numerous as to render detailed references unnecessary." Later in life rectal cancer occurs, of course, in both men and women, with still greater frequency.

Now, if we ask is there any evidence that these early cases are explicable in accordance with our spermatic hypothesis, the answer must be negative. There is no evidence to this effect. Very true. But if there existed any real facts, in support of it, they would be for the most part secretly concealed, and the cause of the disease would remain mysteriously veiled.

There are historic records, both ancient (*e. g.,* Sodom and Gomorrah; also Epistle to the Romans, chap. 1, v. 26, 27, also Leviticus, chap. 18, v. 22; and ch. xx, v. 13), and modern, and criminal records in all ages, which indicate, the possibility at least, that cancer of the rectum may fall in line with other cancers that arise from the fertilization of epithelial cells by spermatozoa.

But while these cases may be few in number, it does not follow that the majority of cases met with in practice involve any implication of immorality. *Not at all.*

In the rectum, and anus, there occur many tissue lesions, due to "chronic irritation"—such as belong to hemorrhoids, fistula in ano, anal fissure, pruritus ani, ulcerative proctitis, traumatism, the lacerations of childbirth, and many others—the proliferated

epithelial cells of which may be fertilized by spermatozoa contained in the water of a bath, or by infected clothing, or by a contaminated hand; or, again, (in women at least) during normal coitus.

These suggestions, with regard to rectal cancer may or may not be true; but in the light of our present hypothesis they seem to be sufficiently plausible to deserve investigation.

THE PROTECTIVE FERMENTS IN CANCER AND IN PREGNANCY ARE ALIKE.

By the experiments of Abderhalden, Vaughan and others, and more recently by Dr. Clarence F. Ball, of Rutland, Vermont (*Jour. Am. Med Assoc.,* Feb. 21, 1914, p. 599), it has been demonstrated that there is a "protective ferment" produced *in cancer, similar in its action to that produced physiologically, in pregnancy.* With my view it could scarcely be otherwise. The cancer patient, in a way, *is* pregnant—pregnant with a colony of ectopic impregnated somatic epithelial cells—fertilized by sperm—pursuing their abortive embryonic evolution, just as in normal gestation the patient is pregnant with a single fertilized germinal epithelial cell pursuing its normal embryonic evolution. Normal gestation is the physiological prototype of the abortive and abnormal embryonic new formation denominated "cancer." In both cases the "formative stimulus" (Virchow) which gave rise to the new formation was *sperm.* Both might have been prevented by protecting the epithelial cells—whether germinal or somatic—from the action of the spermatic "formative stimulus."

In the comparison of cancer with pregnancy we may here note the significant statement of Williams (*Natural History of Cancer,* pp. 7 and 468) that the constitutional changes coincident with pregnancy and post-partum conditions, represent the physiological counterparts of the cancerous cachexia (p. 7). Hence there is nothing specific in the cachexia of cancer; its normal prototype appears in *post-partum conditions* (p. 468).

CONCLUSION.

More than fifty years ago (1858) Virchow, in discussing what he called *"formative stimulation," i. e.,* the process by which cell division is stimulated, drew a parallel between the embryonic development of cells caused by impregnation and the pathological development of cells caused by a formative stimulus of some kind analogous to impregnation.

He said: "If we admit the identity between the pathological and the embryonic new-formation, the egg will have to be considered as the analogue of the pathological mother cell, and the act

of impregnation as the analogue of pathological stimulation" (*Virchow's Archiv.*, xiv, 1, 1858).

Loeb, commenting on Virchow's statement says: "the analogy between the causation of the development of the egg by a spermatozoon and the causation of a pathological growth seems correct." But after this agreement between them neither Virchow nor Loeb makes any suggestion as to the spermatozoon itself being the active agent in stimulating the production of a pathological growth in the same way that it does a normal embryonic one. Following Virchow's analogy, therefore, may we not reasonably ask: If a normal germinal epithelial cell, under natural conditions, can be so stimulated by a spermatozoon as to initiate the *physiological* embryonic new-formation which grows into a fetus, why may not an abnormal epithelial cell under *un*natural conditions, be also stimulated by a spermatozoon to begin the production of the *pathological* embryonic new-formation which grows into cancer?

It must of course be understood that there is no such thing as a special "vital principle" in the spermatozoon; it is simply Nature's method of portage; it is the vehicle by which the physico-chemical matters contained in its body are carried into the egg. If these matters could get into the egg some other way, impregnation and cell division would take place without the instrumentality of the spermatozoon, as has been demonstrated by the experiments of Loeb and others, who have also shown that dead extract of sperm is effective for impregnation; and what is more, their experiments seem to indicate that possibly the sperms of different creatures, in their physico-chemical composition, follow some general law, which renders them more or less alike, and capable of impregnating very different kinds of eggs or cells. Thus he fertilized the eggs of different kinds of sea-urchins with the sperm of star-fish, the sperm of crabs, the sperm of sharks, and the sperm of roosters. Note that the embryonic development in these cases did not go very far, but nevertheless the sperm was the agent—the "formative stimulus"—by which the embryonic new-formation was induced to *begin*.

But it is this same *initiation*—this *beginning* of an abortive embryonic new formation—such as cancer, which I have suggested finds its "formative stimulus" in spermatic fluid.

Finally, it comes to this: human sperm—whether alive or dead—either can and does fertilize epithelial cells, thus stimulating them to the formation of pathological new growths, or it cannot and does not do so. In this matter we must either admit or exclude the agency of the spermatozoon. To those who adopt the latter view, it may be asked: *Why do they exclude the spermatozoon?*

The previous papers in which I have endeavored to explain

Uterine Cancer, Cancer of the Breast, and Chimney Sweeps' Cancer, in accordance with the foregoing theory, appeared in the following journals:

The WASHINGTON MEDICAL ANNALS, vol. xii, March, 1913.

Surgery, Gynecology and Obstetrics (Chicago), vol. xviii, Sept., 1913.

Trans. Amer. Gynecological Society, vol. xxxiii, May, 1913.

The Urologic and Cutaneous Review (St. Louis, Mo.), vol. xviii, January, 1914.

In the preparation of this paper I am much indebted to the Library of the Surgeon-General's Office (U. S. Army), and to the library-staff of this unrivalled Institution. I beg to return my sincere thanks, for numerous courtesies.

Dr. Mallory wished to speak of two items of evidence which may have force in support of Dr. King's thesis, one an ancient tradition, the other a newly-discovered biologic fact. It is the common belief of animal fanciers and breeders that if a thoroughbred is fertilized by a mongrel, it is afterward impossible to get pure, thoroughbred offspring from that mother. This would imply that the effect of the first fertilization was to produce some somatic change in the animal which is persistent throughout her life. If this belief is founded upon fact, it is in harmony with Dr. King's theory. There is recent evidence that spermatozoa or their products do penetrate the body of the female receiving them. Physiologists have long known that if a protein is injected into the body of an animal a ferment will be elaborated by the body cells which has the power of digesting that protein; it has been found that female rabbits after copulation have in their blood a ferment which will digest the spermatic fluid of the male.

Dr. Frankland said that perhaps there had been so little discussion thus far because the arguments advanced by Dr. King were so unanswerable. No one had risen to discredit any of the facts adduced. Indeed, there was no *supposition* in the paper. The essayist had brought together established facts, and whatever is discovered hereafter about cancer must be consistent with those facts.

Dr. Macatee said that Dr. King had spoken of the star-fish, jelly-fish, etc., the sperm cells of which served to fertilize maturated cells just as do the sperm cells of the higher biologic orders. On the basis of Dr. King's theory, might not cancer of the stomach be caused by the eating of raw male oysters?

Dr. King expressed his appreciation of the remarks made in the discussion of his paper. It was true that the characteristics of the first consort persist in the children of a mother by other sires. It was true also that Kölbrugge and others had demon-

strated that the whole system of a female may be permeated by the spermatozoa of her mate. The objection has been made that his theory did not explain sarcomata; but sarcomata are not cancer, they are not epithelial at all. He quoted Gould as holding that there is an actual antagonism between carcinoma and sarcoma, as follows: Gould in his Lecture (*Brit. Med. Jour.*, Dec. 10, 1910, p. 1840) says: We have the remarkable fact, discovered by Bashford, "that in certain cases the repeated inoculation of an epithelial cancer stimulates the mesoblastic tissues of the host so intensely that the stroma becomes proportionately more and more abundant and more and more cellular, while the epithelial growth lessens, until the carcinoma is replaced by a sarcoma. No more surprising and wonderful fact has yet been forthcoming from cancer laboratories than the demonstration of this transformation of an epiblastic malignant growth into a mesoblastic cancer, the carcinoma exciting the development of a sarcoma and thereby being itself destroyed."

Dr. Frankland had complimented him upon first putting forward this theory; the fact was that for years Klebs and others had recognized that in order to explain the genesis of cancer it was necessary to find something which was able to fertilize body cells and start them upon the ungoverned embryonal growth which was called cancer. But research workers will never find the fertilizing cell, because the sperm cell completely disappears after having fused with the female pro-nucleus of the cell that it has fecundated.

A CASE OF MILIARY TUBERCULOSIS OF THE LUNGS DIAGNOSED BY ROENTGEN RAYS.*

By Charles A. Pfender, M. D.,

Washington, D. C.

In the discussion following my paper on autoserotherapy at the last meeting Dr. Randolph stated that he did not believe it possible that miliary tuberculosis can be diagnosed by radiographic methods. He wished to be shown. Owing to the late hour I decided to defer my reply until tonight. I have brought with me an x-ray plate made from the chest of a child suffering from pleurisy with effusion. The skiagraph confirmed the physical diagnosis and in addition revealed a condition which had been entirely overlooked and not even suspected. Throughout the lungs are seen minute shadows of nodules which were interpreted to be those of miliary tuberculosis. The nodules appear somewhat blurred

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and larger than single miliary nodules in the early stage would be, but this is due to the fact that the child was breathing at the rate of 70 respirations per minute, and although less than a quarter of a second was required for the exposure, the resultant plate is not as clear as it would have been had the child been breathing normally. Moreover, one should remember that in miliary tuberculosis of the lungs these nodules are superimposed one over the other in large numbers, and to portray a single nodule is practically an impossibility; no matter how small the nodule shadow, it is not unlikely that it is composed of numerous nodular areas.

The prognosis was bad. When pressed for a definite opinion I stated that the child would probably live six weeks. The effusion cleared up under modern methods of treatment, but the child died from general miliary tuberculosis four weeks after diagnosis.

I should like to add *en passant* that the diagnosis of miliary tuberculosis of the lungs by means of the Roentgen ray is accomplished rather easily with an up-to-date apparatus as compared with many instances of incipient pulmonary tuberculosis. The minute miliary nodules represent innumerable changes within the lungs which are readily portrayed by the rays long before physical examination will reveal any positive signs or even a suspicion of the true pathological condition of the lungs. I believe, however, that there is no other diseased condition in which a careful anamnesis is so valuable and important an aid to the roentgenologist as tuberculosis of the lungs in any stage or form. We have simply reached the parting of the ways. Either the internists will coöperate with the roentgenologists and thus fortify their present position or the roentgenologists will be compelled to do much work which rightfully belongs to the domain of the internists, with the result that neither will be in a position to do their best. Ultra-conservative measures and views regarding the employment of roentgenology are now only advanced by those who are uninformed of the true status of this wonderful science.

Dr. Randolph asked how big were the tubercles when examined at autopsy? He asked the question because there may be differences of opinion as to the meaning of the word miliary; this is usually agreed to be a small tubercle about the size of a millet seed and not much more than visible when the tissues are exposed.

Dr. S. S. Adams agreed with Dr. Randolph as to the meaning of miliary tuberculosis. There are many such cases at the Children's Hospital; the children appear to have symptoms of typhoid fever, but they go on to a fatal termination, and when at autopsy the lung is cut, no caseous deposits are to be seen, but merely these little millet seed tubercles.

Dr. Selby quite agreed with the diagnosis made by Dr. Pfender, but emphasized the importance of obtaining stereo-radiographs in addition to a fluoroscopic examination in lung conditions. Even minute tubercles 1 mm. in diameter could be distinctly demonstrated by this method. He advised against attempting to make a diagnosis by means of the fluoroscope alone. The interpretation of single plates is difficult because of the fact that the shadows we see are cast by the many structures more or less superimposed.

Dr. Pfender said that it must be remembered that when the plate on exhibition was taken the child was breathing at the rate of 70 to the minute and was crying; though the exposure was very brief, the shadows are somewhat disseminated. Subsequent events in this case bore out the diagnosis, and at the autopsy only very small tubercles were found; it was a case of true miliary tuberculosis. He could remember no caseous nodules at all.

TWO CASES OF ECTOPIC PREGNANCY.*

By Isabel Haslup Lamb, M. D.,

Washington, D. C.

1. The specimen consisted of the right fallopian tube and ovary; the tube was somewhat dilated, its wall thickened, and the cavity contained some blood; ovary cystic. The patient, a white woman, age 32, had been married fifteen years; had her first menses at 13 years; they became very irregular. Three male children; the first was born one year after marriage, the second twelve years and the third thirteen and a half years after marriage. From 1905 to 1909 she was treated locally and generally for the purpose of inducing pregnancy. In 1909 she had typhoid fever. At the birth of the third child she was infected with gonorrhoea by the finger of the examining physician; had all the clinical symptoms of the disease, though no microscopical examination was made of the discharge. The eyes of the new-born child were also affected. She was treated for two years, the acute symptoms were relieved, the exudate softened up, the adhesions were stretched or loosened, the metritis and endometritis cleared up. February 24, 1913, coition occurred; on the 25th her menses appeared and she had about the usual quantity, but the time was shorter. April 6 she had sharp pelvic pains, a chill, rapid shallow breathing, nausea and faintness. Seventh, severe pain in pelvis and thighs; right side of pelvis filled with a soft fluctu-

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* Reported to the Medical Society January 28, 1914.

ating mass, and there was a shreddy membranous discharge. Eighth, Dr. E. A. Balloch removed the specimen at Sibley Hospital. Recovery was uneventful.

2. Body of uterus, left tube and ovary, placenta, fetus at about four months, and the cord. The uterus contained fibroids; ovary cystic; the fetus, a male, was shrunken. The mother, a colored woman, age 43, had been married eighteen years; no children; had had two abortions, at 2 and 4 months respectively. Her last menses appeared Nov. 19, 1912. About Dec. 17, she had lancinating pains in the abdomen, nausea, was unable to retain food, had severe pain in urination and defecation; abdomen enlarged; emaciation, headache, constipation. She was treated for possible appendicitis and peritonitis. Was first seen by Dr. Lamb March 12, 1913; was then much emaciated; abdomen large, tense, very tender; there was some fluctuation; uterus about the size of a three months pregnancy, firm, slightly movable; os uteri large, soft, patulous, purplish; vagina purplish; cystic tumor at left of uterus; no bruit nor souffle. The emaciation rapidly increased; paroxysms of pain became more frequent. She was admitted to Garfield Hospital and April 3 Dr. A. L. Stavely operated. The abdomen was full of bloody fluid and clots; placenta attached to posterior surface of uterus, broad ligament, bladder, left ureter, intestine, and extensively to the parietal peritoneum, Uterus large, dense; left tube ruptured; large cyst in left ovary; fetus alive. As far as possible the placental adhesions were broken up, and the specimen was removed. Convalescence was slow, complicated with pleurisy. By June she had completely recovered and was attending to her household duties.

Dr. Balloch said that the specimens and cases suggest two points of special interest: (1) In the patient operated upon by himself, conception had occurred after a well defined gonorrhoeal infection; this is usually regarded as impossible. (2) The cases bring up the oft-debated question of immediate or delayed operative intervention. He himself believed in immediate operation; the opponents of this idea say that the patient has already bled as much as she is going to bleed when the diagnosis is made and that it is better to wait until she has recovered from the shock. He felt that it is unsafe to depend upon spontaneous arrest of a concealed hemorrhage of this sort.

Dr. Lamb had neglected to state that both patients recovered.

Too Common For Her.—"So you have decided to call in another doctor?"

"I have," was the reply. "The absurdity of the man prescribing linseed-tea and mustard plasters for people of our position!"

CASE OF MALFORMATION, EPIGNATHUS.*

By D. S. Lamb, A. M., M. D., L.L.D.,

Washington, D. C.

Dr. Lamb for Dr. W. S. Bowen presented a monstrous fetus, an *Epignathus*. The fetus was a male at about six months, the scrotum still showing remains of the genital fissure. From the mouth of the fetus projects an irregular nodulated reddish mass, that varied in consistency. Examination microscopically showed the mass to be quite vascular, with embryonic tissue, and a covering of undeveloped epithelium. The mother was a colored woman, age 17; she and her parents were apparently normal.

This kind of malformation is so rare—there are probably not more than fifty cases reported—that it deserves further mention. In these cases the *autosite* as it is called is usually well developed. From its mouth there projects what is called the *parasite*, which often consists of easily-recognized parts of a fetus, but more often is composed of cysts, cavities, and intervening embryonal tissue of very low development. The covering of the parasite may be well developed skin, containing hair bulbs and sweat glands, and with downy hair. Sometimes the covering of the mass within the mouth of the autosite is mucous membrane continuous with that of the mouth. Careful examination sometimes shows the presence of brain substance, skin, epithelium, fat, hair, teeth, cartilage, bone, liver substance or portions of intestine. The attachment to the mouth is usually complex, sometimes extends to the base of the cranium; sometimes there is a pedicle attached to the base of the sphenoid bone. The blood supply is said to come from the vessels in the mouth or at the base of the brain of the autosite.

The growth of the parasitic tumor affects mechanically the development of those parts of the autosite to which the parasite is attached. The interference with growth of the autosite may be quite marked.

The origin of this form of malformation has been a good deal discussed.

Hirst and Piersol in their work on Human Monstrosities, 1893, from which the above remarks have been taken, state as their opinion that most of the cases are due to the implantation of the allantois of the parasite in the anterior extremity of the autosite, and regard the adhesions of the parasite tumor to the mouth as secondary.

Dr. Hagner said that the parasitic foetus in this specimen was said to present the appearance of having hypospadias. The condition did not seem to him to be hypospadias, because there was a

* Reported with specimen to the Medical Society February 11, 1914.

distinct foreskin which was rather phimotic, whereas in hypospadias there is a congenital absence of the floor of the urethra, and children with the condition seemed to be circumcised at birth. The alleged hypospadias opening was a closed dimple. He spoke of a case of complete hypospadias in a boy under his care and described the anatomical appearances; he had not yet undertaken any plastic operation in this case and would not do so until the child had attained full development.

Dr. Friedrich asked if this case of Dr. Hagner's could be regarded as one of so-called hermaphroditism.

Dr. A. B. Hooe asked if this might not be in fact a female child. The bodies in the labia might be ovaries and not testicles.

Dr. Hagner said that such cases have been called hermaphroditism, but they are not so. There can be no doubt that this was a male child; there was no evidence whatever of any vagina, and there was a large, well formed penis, except that it lacked a urethral floor.

Dr. Lamb would not insist that this was an instance of hypospadias, but there certainly was a failure of complete closure of the scrotal cleft.

CASE OF TUBERCULOMA OF CEREBELLUM.*

By Paul B. Johnson, M. D.,

Washington, D. C.

This case was seen by courtesy of Dr. D. P. Hickling, to whom I am indebted for permission to report it.

History.—L. M., female, colored, 42 years, married. Admitted to the Washington Asylum Hospital April 3, 1913.

Previous history, obtained after death: Two months ago she came to Washington from Chattanooga, Tenn. For two or three months she has complained of pain in the top of her head which became very severe, and the hair came out in handfuls. About one month ago the pain spread down the back of the neck. For the last two or three weeks she has vomited a great deal, staggered when she walked, and often fell, always to the left side, and began to have a staring expression. She was admitted on a stretcher and confined to bed until death, sixteen days later. On admission, temperature, 99; respiration, 20; pulse, 98. Appetite poor, tongue coated, constipation, no vomiting, mental condition poor, body well nourished. Examination showed a few crackling râles over left upper chest anteriorly, thought to be from a slight pleurisy. Vaginal examination showed tender masses in pelvis. Urine contained albumen and red blood cells; negative for sugar. Vaginal smear six days later showed no

* Reported to the Medical Society January 14, 1914.

gonococci. The temperature rose gradually to 102, then slowly fell to normal three days before death, and was subnormal then to the last. The pulse rate climbed to 122 and then dropped slowly to 50 towards the last. At times she was very restless, but usually lay quietly, sleeping much of the time. Again she would lie with staring eyes, and twitching movements of the head and limbs. If spoken to she would sometimes look at the speaker and turn away without speaking ; again she would answer sensibly, possibly accidentally ; but most of the time she talked foolishly. She had occasional hallucinations of vision. Her voice and manner were always quiet. Her attitude in bed attracted attention because she always lay with her head turned far to the left, but the significance of this attitude completely escaped me. Her bed was in a corner of the ward, and when she turned to the left she had turned towards the wall, shrinking as I supposed from the gaze of the other patients. She would turn her eyes towards me if I spoke to her from the right side of the bed. If asked where she felt pain, she would sweep her arm up to her chest and then carry it up and down her trunk in an indefinite way and sometimes with a coarse tremor. She never put it to her head. She often passed her urine involuntarily, and occasionally also her feces. She menstruated once while she was in the hospital.

Three days before death she became much weaker, and lay in coma with her head still turned to the left. Respiration irregular, frequently three quick breaths followed by a pause ; the heart beat regular but much slower. Died April 19, 1913. There was no definite diagnosis, but it was thought to be a toxic condition from the pelvic inflammation.

Autopsy, about seven hours after death. Scalp bled freely, cranium thickened posteriorly, dural vessels injected, subarachnoid space contained a moderate quantity of fluid. Nothing abnormal noted about the brain, except that in the left posterior fossa of the skull a firm nodular growth impeded the enucleation of the cerebellum. It was slightly adherent to the dura but in trying to bring up the dura with the growth the latter was dislodged. Dura slightly roughened where it was attached. The tumor is smooth on its dural surface, and by its firmer consistency projects slightly above the cerebellar surface. It is about an inch in diameter. The ventricles contained a moderate quantity of fluid and the left was slightly dilated at the posterior horn.

The lungs were everywhere adherent, though no deposits were felt in them, and with the heart were drawn high up in the thorax. There was localized emphysema of the anterior mediastinum and costal subpleural tissues. Pancreas somewhat indurated. Fibromyoma of uterus. Double pyosalpinx. No fluid in any of the serous cavities.

The tissues removed were taken to Dr. D. S. Lamb at the Army Medical Museum, who pronounced the tumor to be a tuberculoma. The tissues were sent to the laboratory of the Army Medical School, where they were examined microscopically by Dr. R. M. LeComte. He reported that the tumor consisted "of a caseous mass with giant cells at the periphery; a few tubercle bacilli were found." In the portion of the pancreas removed he found besides "an increase of the interstitial fibrous tissue," a rather rare new growth which he classed as an adenoma of the islands of Langerhans. This was "an irregular mass lying on the anterior surface of the pancreas between it and the peritoneum. * * * It varies from 1 to 10 mm. in thickness antero-posteriorly * * * and extends over the entire anterior surface of the specimen" (roughly 2 inches square). "From the morphology, arrangement and staining characteristics of the cells of the new growth it is evident that it sprung from the islands of Langerhans. The presence of a distinct capsule and the absence of infiltration place it in the class of benign growths usually designated as adenomata." Dr. LeComte makes a very interesting suggestion: "Tumors of the cerebellum may give rise to true diabetes (Futcher), and in this case there was present a tuberculoma of the cerebellum causing dilatation of the ventricular system. Associated with this was an enormous enlargement of the islands of Langerhans while there was no glycosuria present. It is possible that this brain tumor was capable of producing a diabetic tendency which was met by enlargement of the islands so that no sugar appeared in the urine, and that the brain tumor caused death before the protective mechanism was overcome." (Quotations from R. M. LeComte, "Adenomata of the Islands of Langerhans," *Jour. of Med. Research*, xxix, 2, pp. 251–258, Dec., 1913.)

Dr. Williams said that Dr. Johnson was to be congratulated upon giving the Society a report of this case; there must be many such cases not reported. An examination of the optic papilla should have been made in this case, as in the case of any patient unconscious from an unknown cause. Why was there no examination of the reflexes? The reflex responses would have been of great diagnostic value. The position of the head was very significant of disease of the efferent cerebellar fibers. Another very significant symptom was the coarse tremor; the cerebellar tremor is so very characteristic that it should not escape the attention of any one trained in neurology.

Dr. Roy asked if the blood pressure had been taken in this case.

Dr. Wellington said that Cushing has given very encouraging reports of the relief to be afforded by the decompression operation in almost any intracranial disease associated with increased volume of the cranial contents.

Dr. Johnson realized that much should have been done in the examination of this patient that was not done; he had learned much from the study of the case, both clinically and at autopsy. In reporting the case he had been quite aware of the diagnostic deficiencies and had been instructed by the remarks made in discussion.

HYSTERIA SIMULATING ECLAMPSIA IN A PRIMIPARA AT THE THIRTY-SEVENTH WEEK OF PREGNANCY.*

By Prentiss Willson, M. D.,

Washington, D. C.

Convulsions in the last few months of pregnancy usually spell eclampsia. This is not an inviolable rule, however, as during this period various lesions of the central nervous system, acute poisoning, acute infections, especially pneumonia, uremia, epilepsy and hysteria may have an etiological relationship to the convulsive seizures. While such cases are rare, it is of the greatest importance that their true nature be recognized, in order that serious therapeutic errors may be avoided.

On the 14th of this month I was called hastily at night to see a girl 21 years of age, illegitimately pregnant for the first time. About a week prior to this time I had made the usual ante-partum examination on this patient and it had disclosed nothing abnormal. The family and previous histories were without interest. Confinement was estimated for the 7th of February next. The telephone message stated that the girl was in convulsions, and I made no doubt that I had to deal with a case of ante-partum eclampsia.

Upon arrival the patient was found to be in a state of coma from which supraorbital pressure did not rouse her. A hasty examination disclosed no edema of feet, ankles, hands or face. Respiration was not stertorous, but quiet and even. The decubitus was dorsal and the patient was relaxed. The pulse was rapid, but apparently not of high tension. The blood pressure was not taken because of lack of facilities. The pupils tended toward contraction. The fetal heart was clearly discernible in the left lower quadrant. About as this examination was completed the patient regained consciousness suddenly, with a start. At first there was considerable confusion which cleared quickly, however, when the following history was obtained. She had never had epileptic seizures nor had anyone in her family. There had been scanty urination for some days, but no headache, no

*Reported to the Medical Society January 21, 1914.

visual disturbances, no vertigo. After eating her supper at 5.30 she had felt nauseated and had vomited. After this she had noticed considerable epigastric pain and a sense of numbness over the whole body. Here her memory ceased. The attendants stated that there had been five or six convulsions before I arrived. The patient was asked to attempt urination and passed about two ounces. Examination of this showed the absence of albumen. When I returned to her she said that she felt the numbness coming over her again and that her hands and feet were cold. She was rubbing her hands together. Palpation disclosed general abdominal tenderness, worse in the epigastrium. While palpating the epigastrium my attention was attracted by the cessation of resistance, and I looked up to find the patient unconscious again. The eyes were closed and the facial muscles were in repose. There was no cyanosis or stertor. All four limbs were twitching rhythmically but no movement of the trunk muscles could be detected. The twitching continued for possibly one or two minutes when the patient suddenly jerked over onto her right side, trunk slightly flexed, thighs slightly flexed on the abdomen, and arms adducted and crossed on the chest. The limbs were held rigidly in this position for a minute or two, when there was a sudden relaxation, unconsciousness persisting. In a few minutes more consciousness was regained as suddenly as before. In a subsequent attack, sharply pricking the soles of the feet apparently materially hastened the recovery. Having made a diagnosis of hysterical convulsions I asked Dr. Robert Y. Sullivan to see the case and he entirely agreed with the opinion expressed. The history of epigastric pain, vomiting and scanty urination all pointed toward eclampsia. On the other hand, the absence of edema, of albumen in the urine, and the total difference in the character of the convulsions, all seemed to indicate some cause other than toxemia. Although eclampsia is said, on good authority, to occur without edema or urinary changes, I have never seen such a case. The point given most weight in the exclusion of eclampsia was the character of the seizures. I have never seen an eclamptic convulsion which did not begin in the eye and face muscles and which was not associated with stertor and cyanosis.

The subsequent history of the case proved the diagnosis to be correct. When left to her own devices the patient slept quietly all night and got up feeling well the next morning. Thirty-six hours after the attack the blood pressure was 108.

Dr. A. F. A. King said that Dr. Willson was most likely correct in concluding that this was a case of hysteria. Dr. King had noticed one peculiarity which is always present in hysteria;

the eyelids are never fully and quietly closed, but they always show a fine twitching, as if they are held closed by a constant effort of the will; was this the case with Dr. Willson's patient?

Dr. Willson had not noted the behavior of the eyelids.

OSTEOSARCOMA OF HUMERUS FOLLOWING FRACTURE.*

By A. R. Shands, M. D.,

Washington, D. C.

C. W. B., aged 65; was a very robust man for his age; florid complexion, quite stout, and with an excellent personal history as far as illness was concerned, for he informed me with much self satisfaction that he had never had a doctor's bill to pay for himself in his life.

In October, 1912, while in an encounter with an unruly horse he sustained a simple fracture of the shaft of the humerus. This was treated in the usual way by a competent physician. The splint was left off at the usual time and nothing unusual noticed; there seemed to be good union.

In January, 1913, about three months after the accident, a uniform enlargement was noticed at the seat of the fracture; this was thought at the time to be an excess of callus. Nothing special was done as far as I could ascertain. About March 1st the patient refractured the humerus while turning over in bed.

It was soon after this that he was referred to me by a local physician and I found the condition present that is well represented by the x-ray except for the swelling and infiltration of the soft structures, which was enormous. An interesting feature in connection with the case is that the patient never complained of pain.

I advised immediate amputation at the shoulder joint; my advice was not accepted for about a month. April 10, 1913, I amputated the limb at the shoulder joint. The operation was done after the so-called bloodless method, which was made possible by the use of Wyeth's amputation pins. This method of constricting the circulation acted perfectly, for not a blood vessel was clamped until the constriction was removed. This enabled me to remove the limb very rapidly—a few minutes only was consumed; as soon as this was done the anesthetic was discontinued, and by the time the wound was closed, the patient had practically recovered consciousness. The convalescence was entirely

*Reported to the Medical Society January 14, 1914.

uneventful; the wound healed by perfect primary union and he left the hospital in ten days.

Up to the present time the patient shows no evidence of any similar trouble.

The microscopical examination by Dr. F. F. Russell showed the growth to be a giant cell osteosarcoma.

Dr. Carr was much interested in the report of both cases. He felt obliged to criticise Dr. Shands' treatment of the case of osteosarcoma of the radius; first, because he had cut into the tumor to remove a specimen. Twelve or fifteen years ago Halsted had made the statement that cancers are never cured when first cut into for diagnostic purposes and afterwards removed; Dr. Carr agreed with this opinion. This practice should be stopped. We thus ruin our chance of curing latent cases. He hesitated even to remove a piece for immediate examination by frozen section and avoided this practice except in very obscure cases. Second, he had to criticise Dr. Shands for his method of removing the growth; in these cases dissection should be well beyond the tumor and in healthy tissue. In the extremities the operation of choice should be amputation well above the tumor.

These malignant growths following injury are not rare despite the contrary opinion so often held. Dr. Carr had the following case a few years ago: a man had been injured by a thorn which had stuck in his heel; ten years later he developed an osteosarcoma of the os calcis. The foot was amputated and the diagnosis confirmed by microscopic examination. That case had induced him to make a special study of the subject, and he had found that there are very many such cases due to trauma. This question was discussed in 1907 at the Congress of Surgeons at Paris and the most diverse views were presented. In 1910, Phelps elaborated a theory holding that there is no connection between trauma and cancer; but the opposite view is supported by evidence hard to doubt. Dr. Carr quoted Coley on this subject. There is an important medico-legal aspect to the matter in view of the possibility of suits for damages growing out of injury followed by osteosarcoma; there has already been such a case in France.

Dr. Williams said, in connection with Dr. Carr's remarks, that an analogy exists in the case of Charcot joints, the immediate exciting cause of which is often a traumatism. It would be specially unfortunate if there should be a recurrence of the tumor in Dr. Shands' last case; the Christian Science belief of the patient would assuredly place the blame upon surgery.

Dr. Shands said that his reason for cutting into the tumor for examination was to convince the patient that something must be done. When the tumor was found to be a giant-cell sarcoma,

Giant Cell Osteosarcoma of Humerus.

the conservative plan of removal was followed in accordance with the views of good authority. In the first case the arm was amputated because it had become a useless appendage.

SIMPLE METHOD OF TESTING RENAL FUNCTION WITH PHENOL-SULPHONE-PHTHALEIN.*

By W. Ashby Frankland, M. D.,

Washington, D. C.

Within the past three years the use of Phenol-sulphone-phthalein in testing renal function has become established as a useful measure.

In the method usually followed an intramuscular injection is made of a given quantity of the dye and collection of the urine is immediately commenced, the patient having previously taken one pint of water to insure a plentiful flow of urine. The principal elements in the test are the time of the first appearance of the dye in the excreted urine, the duration of its presence, and the intensity of the color in the first two hours. To measure the intensity of the color an apparatus is required which may not always be at hand.

It is the purpose of this paper to direct attention to the simplicity of testing the renal function with this substance by noting the time of the appearance of the dye in the urine after injection, and the duration of its presence there.

The importance of estimating the percentage of the dye eliminated in a given time is realized. When, however, a comparison of the cases reported is made, and the constancy of delayed appearance and prolonged elimination is noticed in all the cases in which small percentages are shown by the colorimeters to be eliminated in the required time of two hours, it is seen that the cases may be classified as of severity without the color estimation. The fact that there is a wide margin between the normal cases and those which are shown by the color estimation to be sufficiently abnormal for the purposes of prognosis, helps to make this possible.

In this method the patient first drinks two glasses of water, after which 1 c.c. of a solution containing 6 mg. of phenol-sulphone-phthalein is injected into the lumbar muscles.

The urine is passed or drawn into a vessel containing an alkaline solution every five minutes after the injection until the distinctive color of the dye is observed, and every hour afterward,

*Read before the Medical Society January 28, 1914.

counting from the time of the injection, until the color is no longer present in the urine.

Four bottles are provided and are numbered in which these specimens are placed for later examination, when their contents must be made alkaline, if not already so, by the addition of sodium hydroxide solution.

In normal cases the dye should appear in the urine in from five to ten minutes. By the end of the second hour about 80 per cent. should be excreted, leaving only 20 per cent., which is usually excreted within the third hour.

The bottles of urine therefore would be colored as follows: 1st and 2d bottles, deeply colored; 3d bottle, pale; 4th bottle, urine uncolored.

In abnormal cases in which the appearance of the dye in the urine is delayed, the results will be apparent in the bottles accordingly.

The 1st bottle may be pale or uncolored by the dye. The 2d, 3d and 4th bottles may be colored with a pale or deep tint, depending on the rapidity of excretion.

In the severe cases, especially in interstitial nephritis in which uremia is impending, the 1st bottle may be uncolored urine, the following ones all having the pale tint due to slow excretion.

The following cases were observed more than eighteen months ago when, the first observation was being taken fifteen minutes after the injection. They are presented, however, in illustration of the proceeding.

	Excretion began.	Ended.
Case No. 1,	within 15 minutes,	2d hour. Had had albumen and casts.
Case No. 2,	within 15 minutes.	2d hour. Had had albumen.
Case No. 3,	within 15 minutes.	3d hour. Hyaline casts present.
Case No. 4,	within 15 minutes.	3d hour. Hyaline casts and albumen.
Case No. 5,	within 15 minutes.	5th hour. Hyaline casts, indican. Valvular disease.
Case No. 6,	within 15 minutes.	6th hour. Toxaemia of pregnancy; indican and casts.
Case No. 7,	within 15 minutes.	8th hour. Toxaemia of pregnancy; indican and hyaline-casts.
Case No. 8,	within 15 minutes.	8th hour. Spec. grav., 1010.
Case No. 9,	1st hour.	16th hour. Cardio-renal; died in four weeks.

Dr. Kemble said that two years ago Dr. Frankland had tried this method upon a patient of his own; he had been strongly impressed with the test. Since then he had had a year's association with Geraghty and had observed the emphasis placed upon the importance of determining the color index with mathematical exactness. He had hoped Dr. Frankland would not present the method just demonstrated, because it seemed to Dr. Kemble unwise to depart from the method advocated by the originator of the test; and the original method may be used simply and inexpensively with the aid of an apparatus which may be obtained in Baltimore for five dollars. The phenol-sulphone-phthalein test is the best test of renal function ever devised; it has the advantage over the urea estimation in that it gives an idea of the ability of the kidneys to excrete poisonous substances. Patients may be rapidly on the way to active uremia with still a fair percentage or urea in the urine. He had been able to obtain valuable information of approaching kidney failure by means of watching the diminishing phthalein output after successive tests. It seemed to him that Dr. Frankland's test was merely pleasurable to the eye.

Dr. Hagner felt very much as Dr. Kemble as to this matter; accuracy of determination of the phthalein test is most desirable. It seemed to Dr. Hagner that two hours is long enough to observe patients subjected to this test. He had had many cases to attest the value of the method.

Dr. Williams said that Dr. Kemble had appealed for mathematical accuracy in making the test. Now Dr. Frankland's method is quite as accurate as Geraghty's, the difference being that the former is based on the time element and not on the quantity element. It may be quite as good as the Geraghty method; that must be determined by experience.

Dr. R. A. Hooe had learned much from Dr. Frankland's paper. The test is of great value, and it seemed to him that Dr. Frankland had not presented his method as an absolutely accurate one, but as an approximate and practical way of applying the test by any physician at any time. Dr. Hooe felt that the more accurate colorimeter estimation is best where possible. The percentage of phthalein output is of no more importance than the time of its appearance; experience indicates that when the color appears in fifteen minutes 40 per cent. will probably be excreted in the first hour. Geraghty and Rowntree have thrown little light on this test as being of value in the nephritides, and state that their experience with chronic interstitial nephritis is that more phthalein will be excreted in the second hour than in the first.

Dr. Frankland said that the principal adverse criticism of his method has been its alleged inaccuracy. He appreciated the

great value of accurate measurements with the colorimeter in extreme cases of prolonged excretion. But when the excretion is rapid the instrument is not needed. If it shows an excretion of 80 per cent. in the first two hours, which is considered normal, there is so much variation in the secretion of normal kidneys that a percentage of 50 per cent. is also pronounced normal. Instrumental measurements of such varying conditions become necessary only when the excretion is very slow. There is such a wide margin between the phthalein excretion of normal kidneys and that of badly diseased kidneys that the method presented in the paper is of sufficient accuracy for most purposes.

CASE OF ANEURYSM OF THORACIC AORTA, WITH PARALYSIS OF LEFT DIAPHRAGM AND HOUR-GLASS CONTRACTION OF STOMACH.*

By John D. Thomas, M. D.,

Washington, D. C.

F. P., colored woman. Admitted to the Tuberculosis Hospital January 10, 1914, almost *in extremis*. Family history not obtainable.

Personal History.—Sixty years of age, born in Virginia, and lived in the District of Columbia forty years. Occupation, domestic. Social condition, widow. Had typhoid fever when young, otherwise good health all her life. In May, 1913, was admitted to the Washington Asylum Hospital for loss of appetite, pain in back, and epigastrium. She stayed there about one month and left, much improved, to nurse a sick daughter at home. During summer and fall gradually became ill again of same symptoms.

Present Illness.—On admittance from ambulance, patient complained of three main symptoms: continuous pain in back and epigastrium, regurgitation of food, and absolute constipation of one week's duration. Other symptoms were, a rather continuous cough with small watery expectoration, occasionally mixed with a little blood; moderate dyspnea and loss of appetite. No hoarseness, chills, sweats, edema, or bloody stools.

Physical Examination.—Patient so ill a thorough examination impossible.

Inspection.—Emaciated, and very weak, teeth poor, tongue clear, no curved nails nor club fingers, no spinal deformity nor disease of bones evident, no glandular enlargement. Left breast

*Reported to the Medical Society February 11, 1914.

contained a very hard, irregular, movable mass, not painful nor ulcerated. Skin dry, shrunken, no eruptions. Scar of old ulcer on left shin bone. Wide area of pulsation in epigastrium just below ensiform cartilage, with slight protrusion. No apex beat visible. Marked general arteriosclerosis. Chest emaciated, but appeared normal. No retraction, depression, or unusual motion; tactile fremitus normal.

Percussion.—Hyperresonance over both lungs, both anteriorly and posteriorly. A wide area of tympany in left axilla, extending anteriorly almost to the sternum, very much like a pneumothorax. Abdomen painful, relaxed, dull on right side, tympanitic on left and middle, no fluid. Epigastric area dull. Area of normal heart dulness absent, except around lower sternum, and extending from one to two inches to right of sternum.

Auscultation.—Breathing exaggerated over both lungs; no rales; vocal resonance normal, except over the tympanitic area in lower left, where breath sounds could be heard only at upper part of tympanitic area. No lung fistula sound, no coin sound. Heart sounds heard in epigastrium and around lower sternum, not elsewhere. Apex beat under sternum. A forcible, blowing, systolic murmur heard in epigastrium. Radial pulse 110, hard, but not forcible. Temperature 100 degrees on admission, normal or subnormal thereafter. Respirations 26. Patient could get relief from pain by leaning forward. Urine normal; sputum negative for tubercle bacillus.

Diagnosis.—Aortic aneurysm; no tuberculosis; possibly a left pneumothorax.

Treatment.—Hypodermics of morphine for pain. Purgatives could not be retained. High enema given of epsom salts, turpentine, glycerine and water, with good result. These enemata were given several times. Solid food could not be taken, as it invariably came up, but liquid food was well borne. When not under the influence of morphine, patient continually complained of the severe pain in her back and stomach. She gradually became weaker and died January 17, being conscious until two hours before her death. There were no convulsions, spasms, fainting spells, or marked hemorrhages. Death seemed to come from exhaustion.

Autopsy.—Body of colored woman, 5 feet 3 inches tall, 60 years old, emaciated; rigor mortis firm; section made 10 hours post mortem.

Heart.—Precordial area enlarged in all directions, displaced so as to be under the sternum, about 3 inches lower than normal and extended about 1 inch to right of costal *cartilages* of right side. Pericardium contained about 50 c.c. of clear fluid. Heart much enlarged, was in diastole, and filled with soft clots; pericardial surface of heart contained plaques of an old pericarditis.

Right auricle and ventricle dilated, walls thinned. Left auricle normal, left ventricle hypertrophied, but not dilated. Tricuspid and pulmonary valves normal. Posterior leaflet of mitral valve showed two thickenings of considerable size, but no atheroma. In the semilunar valves of the aorta one leaflet was rough and thickened, another slightly contracted, the third normal. Just above the orifices of the coronary artery in the aorta was a large atheromatous, calcareous patch. The aorta was bulged here, producing a commencing aneurysm. Endocardium smooth, muscle firm. Section of heart showed cicatricial areas of a marked myocarditis.

Left Lung.—No adhesions except between lobes. Lung pigmented, collapsible, with no cicatrices of tubercles. *Right Lung.*—No adhesions, pigmented, edematous, otherwise normal.

On the left side the diaphragm was *very much* thinned and pushed upwards by the stomach. This condition was probably due to the pressure on the phrenic nerve of the left side by the mass hereinafter described, causing a paralysis of the diaphragm on the left side and consequent stretching by the dilated stomach. The liver was pushed down; quite enlarged; adherent posteriorly; surface showed many cicatrices; inflammation of the capsule; fatty infiltration; several cirrhotic areas, especially near the gall bladder, which were probably syphilitic. Constriction about middle of anterior surface—*corset* liver; the spleen small and mottled; capsule thinned; Malpighian bodies distinct; congested.

Left Kidney enlarged; capsule stripped readily, showing slight edema; surface irregular and contained cysts and cicatrices; congested; cortex thin and pale; pyramids showed an increase of connective tissue; interstitial cirrhosis; increase of connective tissue around the organ. *Right Kidney* in about the same condition as the left, except that the tissue was more finely granular and parenchymatous degeneration was probably present. Both suprarenals appeared normal.

Pancreas normal in appearance. *Gastro-Intestinal.*—All mesenteric veins dilated. Appendix normal. Stomach greatly dilated and had an "hour-glass" sacculation near the pyloric end. It was pushed far up into the diaphragm. Small intestine very small but normal. Large intestine small except at the splenic flexure, where it was much dilated; otherwise normal.

Bladder, ovaries, and uterus normal in appearance.

Brain and cord not examined.

Aneurysm.—The whole aorta showed extensive atheroma and many calcareous plaques. The thoracic aorta from the point where its descent began to just below the diaphragm was the seat of a large sacculated aneurysm, irregularly oval in shape, walls fairly thinned, and contained post mortem clots. It communicated with the aorta at its middle by means of an opening

as large as a silver dollar. By its pressure it had eroded the bodies of the sixth and seventh dorsal vertebrae. It had not ruptured.

Anatomical Diagnosis.—Acute dilatation of the heart; interstitial myocarditis; aortic aneurysm; cirrhosis of liver and kidneys.

Microscopical Examination of Tissues not yet finished.

Dr. Pfender said that the case was of peculiar interest to him because of a similar case that he had reported to the Society last year. If an x-ray picture had been made in Dr. Thomas's case the erosion of the vertebrae would have been shown and the exact location of the aneurysm thus cleared up. Dr. Pfender's own case was studied by x-ray and erosions could be seen. The man went from under his observation and died a few weeks after he was shown here, his death taking place in South Carolina. It was impossible to confirm the x-ray finding by autopsy.

Dr. Frankland asked if the hour-glass contraction of the stomach in this case might not be accounted for in the same way as the general spasmodic contraction of muscles at the time of death due to the increased amount of carbon dioxide in the blood, especially as the essayist states that the contraction in this case has relaxed somewhat since the autopsy. The histological examination of the section taken from the thickened portion of the stomach wall should prove interesting.

Dr. Thomas said that from a scientific standpoint an x-ray examination of the patient might have been desirable; but from the standpoint of practical value such examination would have been useless. Furthermore the patient was *in extremis* from the time of her arrival in the hospital, and it was impossible to make an x-ray examination. As to the contraction of the stomach, such constrictions do occur in the intestine at the time of death, but in his opinion, do not persist. A section of the stomach was taken for microscopical examination, but no report had as yet been received.

CASE OF CAVITATION OF LUNG IN AN INFANT DYING IN THE SEVENTH MONTH.*

By B. M. Randolph, M. D.,

Washington, D. C.

G. W. D., a white male infant, born September 4, 1912, of a mother suffering with pulmonary tuberculosis. The father is unknown, and the mother has since died, so that historical data are meagre. The infant was admitted to Children's Hospital

*Reported to the Medical Society Jan. 21, 1914. Reprinted from the Transactions of the Ninth Annual Meeting of The National Association for the Study and Prevention of Tuberculosis.

March 21, 1913, with a history of having been ill four weeks. This time represented its stay in the Foundling Home, so that the time of the beginning of the illness cannot be positively ascertained. Nursed at mother's breast during early months of life. The clinical diagnosis of bilateral pulmonary tuberculosis was made at the Hospital. Died April 1, 1913.

Autopsy on day of death showed diffuse tuberculosis of both lungs, the process being more advanced in the right. An ovoid cavity about an inch in length was found in the right upper lobe; incipient cavitation of the upper lobe of the left lung; tuberculosis of bronchial lymph-nodes; extensive tuberculosis of mesenteric lymph-nodes; tuberculous ulceration of ileum; small discrete tuberculosis foci in spleen and liver.

Dr. S. S. Adams had seen this infant before its death. It is very rare to find cavities in the lungs of such small children; he would not undertake to say that he had ever seen another one so young. Such a clear and complete history of tuberculous infection is not usual.

Dr. Randolph said that when he first examined this child he understood the resident at the hospital to say that it was four months of age, and Dr. Randolph thought for a time that he had the record case, the youngest case found in the literature being six months. Later it transpired that the child's age was a little less than seven months.

ESSENTIAL HAEMATURIA.*

By Adam Kemble, M. D.,

Washington, D. C.

Bleeding from the kidney, which apparently rests on no sure pathological basis, has been variously described as idiopathic, paroxysmal, essential, and as renal epistaxis. Numerous explanations have been offered, some observers claiming a definite congestion of the kidney with parenchymatous and interstitial changes, others assuming minute varicosities on the papillae, others a condition analogous to purpura hemorrhagica. Infarction with venous engorgement has been suggested. I cannot conceive that definite parenchymatous or interstitial changes are present when the bleeding can be definitely stopped and with no apparent subsequent signs of nephritis, by very simple methods. Early in the treatment of this disease surgeons have operated on the kidney, splitting it open to the pelvis and, finding no cause for

*Read before the Medical Society February 4, 1914.

the hemorrhage, have replaced it, the bleeding ceasing, not to return. Later it was observed that merely handling the kidney through a lumbar incision was sufficient to definitely stop the bleeding. Later observers succeeded in stopping the hemorrhage by lavage of the renal pelvis with adrenalin solution through the ureteral catheter. It was surprising to find that lavage of the renal pelvis with salt solution would stop the bleeding in many cases, and still more surprisng to find that the mere passing of the ureteral catheter up to the renal pelvis was often sufficient to put a stop to an apparently serious hemorrhage. These facts impress me that the bleeding is dependent on a vaso-motor disturbance or at most to the presence of very small varicosities on the renal pelvis or papillae. Certainly the result of instrumentation is out of all proportion to the amount of bleeding. Many cases in the literature gave typical symptoms of renal colic, simulating stone. The plugging of the ureter by a blood clot may easily cause this.

I call attention in the history of this case to a probable etiological factor. It might be denied that this can be correctly classified as essential hematuria. It was only by a careful history-taking that I correlated the unusual exertion to the commencement of the bleeding. A more insistant inquiry into details might add much light in such cases. Certainly the case has all the signs of typical essential hematuria.

A. B. D., age 22. Family history unimportant. No haemophylic taint. Personal history unimportant. Has never had a similar attack.

August 18, 1913, he unduly exerted himself, moving a heavy anchor on a motor boat. Within a few hours he noticed that his urine was red and blood-tinged. Since this time his urine has been port-wine colored at every urination. Occasionally, on rising, the urine is clear, but throughout the day and night it is always heavily colored with blood. The bleeding is profuse even when quiet, but does not appear to be increased by active exercise, even by vigorous tennis. Has no pain nor discomfort whatever in any region.

November 17, 1913, two months after the commencement of the hemorrhage, he consulted Dr. Guy W. Latimer, of Hyattsville, who found him passing large quantities of bloody urine. November 18th, Dr. Latimer administered 10 c.c. normal horse serum subcutaneously. No effect on the hemorrhage being noted, Dr. Latimer referred the case to me November 21st, when the patient passed three large glasses of port-wine colored urine, which showed an enormous number of red-blood cells. No clots were passed. I cystoscoped him and found a bladder normal in every respect. The right ureter was functionating normally and ejected clear urine. The left ureter functionated more actively

than the right and the fluid ejected was heavily clouded with blood. I was tempted to catheterize the ureter, but not wishing to confuse the issue decided to wait the result of the injection of the horse serum. The progress of the case fully justified this decision. Four days after cystoscopy and seven days after the injection he developed serum-sickness which lasted four days. The third and fourth days he was violently ill, the fourth day's illness amounting to prostration. During this time the bleeding kept up continually. On the morning after the fourth day the rash and other symptoms of serum-sickness suddenly left him, he passed some thick brownish fluid from the bladder, which he described as "thick as gravy," and has not passed any blood since.

I have examined his urine several times recently and it is entirely free from blood and shows no signs of kidney degeneration. It is interesting to note that at the height of the bleeding he showed no effect of the hemorrhage whatever on blood examination except a slight increase in the eosinophiles.

FOUR CASES OF PREGNANCY COMPLICATED BY UTERINE TUMORS.*

By W. Sinclair Bowen, M. D.,

Washington, D. C.

Case No. 1.—White woman, aged 34, primipara, came under my care when three months pregnant. She presented the usual subjective signs of pregnancy but complained of a larger abdomen than the period of gestation would warrant and of much pain in the epigastrium. Examination revealed a pregnant uterus with a fibroid tumor attached to the fundus uteri, the cause of the great pain and constant discomfort. I made preparation to perform a hysterectomy. The fibroid was attached to the uterus by a pedicle, one inch in diameter. This was removed by a careful dissection and the uterine incision closed with catgut sutures. The pregnancy continued until full term and ended in a normal delivery.

Case No. 2.—Mrs. S., age 30, white, presented five months pregnancy, with two fibroids attached, one to the lower segment of the uterus and filling up the pelvic cavity; the other situated on the fundus uteri. I hoped to tide this pregnancy over until the period of viability, but acute labor set in and the Porro operation was performed between the fifth and sixth months. Convalescence was uneventful.

Case No. 3.—Mrs. S., age 40, white, three-para. All labors had been normal. Was called to see this patient who was al-

*Reported to the Medical Society February 4, 1914.

ready in labor. Vaginal examination discovered full-term pregnancy and a fibroid tumor wedged in the pelvic cavity, filling it up entirely. Cervical canal pushed over to the left side. Patient was a frail, delicate woman, anemic in appearance, not a good subject for a serious operation. She was brought to the hospital and after a difficult and bloody operation, the child, uterus and tumor were removed. The pelvic tumor was very difficult to enucleate, but was shelled out of its capsule, after splitting the same. Child normal, fully formed and well developed. The mother did fairly well until she developed an acute lobar pneumonia of the right lung on the fourth day, and died.

Case No. 4.—Mrs. H., white. Came to Washington from Annapolis with a letter from her physician and a diagnosis of pregnancy. She was thirty years old and the mother of two children, the youngest six years old. She gave a history of five months' pregnancy with irregular vaginal discharges of blood at times. On examination of the uterus, the enlargement appeared to me to be a five months' pregnancy, but I told the patient and her husband that the discharges suggested the possibility of some complication; for example, fibroid tumor of the uterus, placenta previa, or premature separation of a normally situated placenta. I advised a conservative plan, so long as the quantity of the discharge was not great and the patient could remain in the city under the care of a trained nurse. These discharges continued but were slight until three weeks ago, while lying quietly in bed, she had a severe hemorrhage. I was sent for and reached the house a few minutes later. I suspected a placenta previa, called an ambulance and took her to the hospital. During the trip she had sharp and regular labor pains every three or four minutes. After being placed on the delivery bed, these pains stopped. Vaginal examination: Finger would not enter external os; cervix seemed more hard and rigid than a normal pregnancy, but as there was no further hemorrhage and the pains had ceased, I put her in a private room with a special nurse. All night she remained fairly comfortable and quiet and she remained so the following day.

The next day at three A. M. pains began and continued regularly for several hours during which time I made two more digital examinations. I hoped by waiting, that the cervix would sufficiently soften to permit the entrance of my finger so as to make a diagnosis. This failing, I took her to the operating room and under ether introduced my whole hand into the vagina but could not force my finger into the cervical canal. After the use of a strong dilator, my finger passed into a tortuous canal running to the left and upwards. I could feel nothing that suggested a foetus or placenta, but on the right of this canal was a mass about the size of a foetal head which might be taken for a

soft myoma or a pregnancy in a double uterus or a cystic growth of some kind. In view of these uncertainties and the urgent necessity of relieving the patient, I opened the abdomen and delivered through the abdominal wound what seemed to be a normal uterine pregnancy with a large haematoma in the right fallopian tube. Upon examination of this blood cyst it bled so profusely that it was necessary to clamp the whole broad ligament, and to perform a hysterectomy. The stump was treated in the usual way and the abdomen closed.

The diagnosis was not finally made until the specimen was opened and it was found to consist of a uterine pregnancy of about three months, complicated by a fibromyoma which pushed the uterine canal upwards and to the left.

In hospital and private practice I have seen a large number of cases of pregnancy, complicated by fibroids, which gave no difficulty in diagnosis and no anxiety in the results. The last case, just reported, caused me more anxiety and more worry than all the rest put together. The patient, however, made a nice recovery.

In Memoriam

DR. THOMAS FRANCIS SMITH.

WHEREAS: The Medical Society of the District of Columbia has learned with much regret of the death of one of our fellow members, Dr. Thomas F. Smith, who had a host of friends, particularly among the younger members.

*Resolved:** That the Medical Society sincerely regrets the death of our associate who was taken away in his prime just as he was entering a promising career in the practice of medicine.

Resolved: That this report be recorded in the minutes and that a copy be transmitted to his bereaved family.

(Signed) W. D. TEWKSBURY,
LAWN THOMPSON,
A. L. HUNT,
Committee.

REPORT OF THE TREASURER, DR. C. W. FRANZONI, FOR THE YEAR ENDING DECEMBER 31, 1913.

WASHINGTON, D. C., *January* 7, 1914.

To the Officers and Members of the Medical Society, D. C.

I present today my forty-first annual report to this honorable body. During the year which has just passed there have been

*Adopted by the Medical Society January 7, 1914.

many changes. The losses by resignation, death and lapses of membership (from being dropped for non-payment of dues) are more than counterbalanced by the accession of names from the Medical Association.

There was $236.00 less collected during 1913 than during the year 1912, while the expenditures were $120.44 greater than during 1912. There were larger payments from entrance fees in 1913 than in 1912, while payments from advertisements were $50.00 less than in 1912. There is a small difference between the unpaid assessments of 1913 and 1912 of $15.00.

Altogether the finances of the Medical Society, while not in as prosperous condition as before the publication of the History, still show a fair balance. The amount on hand must be the guarantee for payment of accruing bills until collections are made from delinquents and from the new assessment which becomes operative at once, according to the new constitution.

Summary of Receipts and Expenditures.

Receipts.—Cash balance on hand January 1, 1913, $616.57; entrance fees for 1913, $110.00; assessments: for 1911, $180.00; 1912, $564.00; 1913, $1,216.00; 1914, $8.00; 1915, $4.00; 1916, $4.00; Associate members, $16.00; Medical Association, $62.00; History, $6; total, $2,060.00. Advertising in MEDICAL ANNALS, $56.00; subscriptions to MEDICAL ANNALS, $3.00; interest on deposit at 2 per cent., $9.37. Total, $2,854.94.

Expenditures.

Stipend, Recording Secretary, $200.00; expenses, Recording Secretary, $9.75; stipend, Treasurer, $200.00; expenses, Treasurer, $23.00; stipend, Corresponding Secretary, $210.00; expenses, Corresponding Secretary, $364.87; expenses, Executive Committee, $125.73; expenses, Public Instruction Committee, $25.75; publishing MEDICAL ANNALS, $766.84; rent of hall and lantern, $180.00; miscellaneous, $96.70; balance carried forward, $652.30. Total, $2,854.94.

Assets.—Cash on hand December 31, 1913, $652.30; furniture: Iron safe, estimated value $65.00; book cases, $25.00; black board, $1.50; total, $91.50; unpaid assessments: for 1912, $104.00; 1913, $776.00; Medical Association, $72.00; History, $2.00; total, $961.00; 425 volumes of History of Medical Society, $425.00. Total assets, $2,129.80.

Liabilities. Estimated expense for storing furniture, $10.00.

Net assets, $2,119.80.

Total collections for 1913, $2,238.37.

Dropped for non-payment of dues, 34; resigned, 9; died, 5. Present membership, 524.

PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Stated Meeting, Wednesday, January 7, 1914.—The President, Dr. J. R. Wellington, presided; about 100 members present.

The Treasurer presented his 41st annual report. See page 154.

The unpaid dues of Dr. M. R. Edmunds were remitted because of his ill health.

Applications for membership were received from the following:

Active membership: Rolla Camden, Jefferson Medical College, 1897; George vonP. Davis, George Washington University, 1910; Alice Winans Downey, the same, 1911; Bernard Glueck, Georgetown, 1909; Elam Dolphus Haysmer, Vanderbilt, 1912; Henry W. Jaeger, George Washington, 1911; Joseph Douglas McCue, College of Physicians and Surgeons, Boston, 1910; Michael J. Ready, Georgetown, 1905; Margaret Ross Stewart, Woman's Medical College, Philadelphia, 1906.

For Associate membership: Walter A. Bloedorn, P. A. Surgeon, U. S. N.; Francis Smith Nash, Medical Director, U. S. N.; Effie Alberta Read, Department of Agriculture; Wm. A. White, Government Hospital for Insane; Eugene R. Whitmore, Major, Medical Corps, U. S. A.; Wm. A. Wickline, Captain, Medical Corps, U. S. A.

Dr. G. Wythe Cook reported that the Executive Committee had reorganized for the year 1914; that he had been elected its Chairman, and Dr. J. B. Nichols Vice Chairman. The Committee called attention to the tardiness of members at the meetings, and urged that the meetings begin promptly at 8 o'clock.

The committee also recommended that the sum of $200 be paid to Dr. D. S. Lamb as a slight evidence of appreciation of his services to the Society as Editor of THE ANNALS. The recommendations were adopted and $200 were appropriated as recommended.

The following were elected to membership:

Active members: Scott Dudley Breckinridge, Georgetown University, 1907; Edith SeVille Coale, Woman's Medical College, Baltimore, 1908; Wm. Thornwall Davis, George Washington University, 1901; Richard Laurens DeSaussure, the same, 1913; Frank Edward Duehring, Georgetown, 1912; Wm. S. Hardesty, George Washington, 1906; Wm. Francis Patten, the same, 1904; John Hunter Selby, University Pennsylvania, 1907; Wm. Pleasant Wood, George Washington, 1909.

Associate members: George B. Fadeley, Falls Church, Va.; Henry C. Fisher, Lt. Col., Med. Corps, U. S. A.; Max Kahn, Bureau Chemistry, Dept. Agriculture; Elliott Coues Prentiss, El Paso, Texas; Carl Voegtlin, Hygienic Laboratory, Washington.

Dr. Tewksbury, for the committee, reported resolutions of respect to the memory of Dr. Thomas Francis Smith, which were adopted. See page 154.

The President announced the following committee assignments for 1914:

Committee of Censors: Frank Leech, A. B. Hooe, Ida J. Heiberger, Louis Mackall and F. R. Hagner.

Committee on Program: A. L. Hunt, P. S. Roy, E. B. Behrend, W. A. Wells and B. M. Randolph.

Committee on Publication: D. S. Lamb, B. F. Pool, H. H. Donnally, Truman Abbe and H. C. Macatee.

Committee on Red Cross Medical Work: L. H. Reichelderfer, John Van Renssalaer, E. A. Balloch (from Executive Committee), and *ex officio* J. R. Wellington and H. C. Macatee.

Committee on Public Instruction: J. B. Nichols, W. M. Barton, L. B. T. Johnson and (representing the National Committee on Public Health Education Among Women) E. C. Folkmar; and (representing the A. M. A. Committee on Conservation of Vision) Oscar Wilkinson.

To represent the Society on the National Legislative Committee of the Council on Health and Public Instruction, J. D. Thomas.

A letter from Surgeon General Stokes, U. S. Navy, was read, expressing appreciation of the resolutions adopted by the Society in regard to his administration of his office. See page 58.

A letter from Dr. W. P. McKee was read, resigning from the Society, because of continued ill health. His resignation was not accepted but his dues were remitted.

The following amendments were adopted:

To Article V, Section 10 of the Constitution; substituting the words "one year" for "two years."

To the By-Laws: To Article VIII, Section 9: Add "No member of the Staff of any hospital receiving patients in private rooms, shall attend such private patient sent to that hospital by a member of the Society, not a member of the Staff, unless specifically requested to do so by the attending physician."

An appropriation of $10.75 was made to cover the deficiency on account of the reception given by the Society to Dr. Adolph Schmidt.

Drs. A. B. Hooe and H. H. Newman presented a pelvic tumor with history of the case. Discussed by Drs. Roy, I. S. Stone, T. A. Williams, Hooe and Newman.

Dr. E. R. Stitt, U. S. N., addressed the Society on the present status of Trypanosomiasis and Filiariasis; illustrated by stereopticon slides. A rising vote of thanks was given to Dr. Stitt.

Wednesday, January 14.—Dr. Wellington, the President, presided; about 60 members present.

Dr. W. C. Borden was appointed delegate to the meeting of the Association of American Medical Colleges.

Mr. Frank T. Fowler demonstrated a Lungmotor.

Dr. Shands reported cases of Osteosarcoma of radius and humerus, and showed radiograms of the cases. Discussed by Drs. W. P. Carr, T. A. Williams and Shands. See page 141.

Dr. P. B. Johnson reported a case of Tuberculoma of Cerebellum, with specimen. Dr. Randolph also presented a specimen of the same disease. Dr. D. S. Lamb reported the microscopic findings in the cases. Discussed by Drs. T. A. Williams, Roy, Wellington and Johnson. See page 136.

Dr. C. A. Pfender read the paper of the evening: Autoserotherapy in the treatment of serofibrinous pleurisy. Illustrated by radiograms. Discussed by Drs. A. F. A. King, Roy, G. Wythe Cook, Randolph, W. P. Carr, Macatee and Pfender. See page 83.

Wednesday, January 21.—Dr. Wellington, the President, presided; about 75 members present.

Dr. Prentiss Willson presented a case involving differentiation between hysteria and eclampsia at the 37th week of pregnancy. Discussed by Dr. A. F. A. King. See page 139.

Dr. C. A. Pfender showed an x-ray plate presenting the picture of miliary tuberculosis, and reported the case. Discussed by Drs. Randolph, S. S. Adams, Selby and Pfender. See page 131.

Dr. Randolph reported a case with specimen of cavity in the lung of an infant that died at seven months. Discussed by Drs. S. S. Adams and Randolph. See page 149.

Dr. W. T. Davis addressed the Society on the subject "An illustrated study of the *fundus oculi*, and showed lantern slides of the fundus in health and disease. Discussed by Drs. Muncaster and W. P. Carr.

Wednesday, January 28.—Dr. E. Y. Davidson, Vice President, presided.

An appropriation of $1.75 was ordered for printing for the Recording Secretary, and $205.45 for the January number of the ANNALS, including the printing of circular cards and reprints of the roster of the Society.

Dr. D. S. Lamb, for the Committee on Publication, read the annual report of the committee, as follows:

Your Committee on Publication respectfully submits the following report for the year 1913:

During the year six bi-monthly numbers of the WASHINGTON MEDICAL ANNALS were published, constituting the XIIth volume, with 360 pages; averaging 60 pages to each number. Besides 31 original papers that were read before the Society, the following were also published: The Report of the Section on Ophthalmology, Otology, Rhinology and Laryngology; the Report of the Committee on Public Instruction, a Seniority list of the

members of the Society, a Revision of the Constitution and By-Laws of the Society, and Memorials to the following deceased members: Drs. John E. Brackett, John S. Billings, Francis Xavier Dooley, Robert Fletcher, Monte Griffith, John Kurtz, Thomas C. Smith and John E. Toner.

The expenditure for printing the journal, the necessary stationery of the Committee, postage, &c., was $766.84, according to the report of the Treasurer; the receipts were from advertisements $56 and from subscriptions $3, making the net cost $707.84. This expenditure of course includes the original cost of printing the Constitution and By-laws, of which reprints were made for the use of the members of the Society.

D. S. LAMB,
B. G. POOL,
H. H. DONNALLY,
TRUMAN ABBE,
H. C. MACATEE,
Committee.

Dr. Eliot addressed the Society on a proposition to enlarge the scope of the ANNALS. He was requested to put his proposition in writing.

Dr. Isabel H. Lamb reported with specimens, two cases of Ectopic gestation. Discussed by Dr. Balloch. See page 133.

Dr. Ada R. Thomas presented a specimen and reported a case of a *seven months fetus* born with the *membrane unruptured.* The fetus was at about twenty-eight weeks. The patient, a white girl from the country, was admitted to the Florence Crittenden Mission after having traveled half a day. She felt quite well on retiring but awoke with pain later in the night. At 3 A. M. she called the nurse who gave her an enema; half an hour afterwards, while the nurse was absent, the patient passed the unruptured sac. She recovered without event. She was a primipara and said that she had never been ill. Last menstruation on July 8, 1913; except for slight nausea, had no discomfort during the pregnancy. She worked in a factory, at a loom, until a few days before she came to Washington. She lifted a heavy tub of water. She could give no other explanation for the precipitation of delivery. The specimen was presented because of its interest as an unruptured sac at seven months, during labor.

Dr. Bowen said that the specimen was the oldest foetus he had ever seen in the intact membranes; such a specimen must be rather rare. There seemed to be a small amount of amniotic fluid, which may account for the failure of the membranes to rupture.

Dr. I. S. Stone asked if there was any evidence of any constitutional disease in this patient.

Dr. A. R. Thomas said that the patient was a perfectly healthy country girl.

Dr. Frankland demonstrated a method of testing renal function with phenol-sulphone-phthalein. Discussed by Drs. Kemble, Hagner, T. A. Williams, R. A. Hooe and Frankland. See page 143.

Dr. T. A. Williams read the paper of the evening: Faith cures, how they act, and methods of scientific mental healing; with reports of cases. Discussed by Drs. W. P. Carr, Jackson, A. B. Hooe, Hagner, E. L. Morgan, A. F. A. King, Macatee and Williams.

Wednesday, February 4.—Dr. R. T. Holden, Vice President, presided; about 110 members present. The Recording Secretary being absent, Dr. A. L. Hunt took his place.

The Treasurer reported for January, receipts, $415.26; disbursed, $210.75.

Dr. G. Wythe Cook, for the Executive Committee, reported that the committee had received a proposition from the Medical Society of the State of New York asking coöperation in a request to the trustees of the A. M. A., to appropriate funds to pay the expenses of the delegates and secretaries to the annual meetings of the Association; the committee recommended that the Society endorse the proposition. The recommendation was adopted.

Appropriations were made as follows: $6.50 for printing for Executive Committee; $45.53 for printing program cards.

On motion of Dr. A. B. Hooe, Dr. T. A. Williams was requested to send his paper on Faith cures to the Corresponding Secretary, and the latter to send it the *Journal A. M. A.*, with request for publication in that journal.

Dr. W. S. Bowen reported four cases of pregnancy, complicated by uterine tumors, and showed a specimen from one case. Dr. Jackson also reported a case of uterine fibroids complicating pregnancy, and showed the specimen. Discussed by Drs. Jack, A. B. Hooe, G. B. Miller, Roy, James Stuart, Stavely, Martel and Bowen. See page 152.

Drs. Kemble and G. W. Latimer reported a case of essential hematuria, and Dr. Kemble read a paper on the subject. Discussed by Drs. Hagner, H. A. Fowler, A. F. A. King and Kemble. See page 150.

The Chair announced the death of Dr. Lloyd Magruder and appointed as a memorial committee, Drs. S. S. Adams, D. S. Lamb and Kober.

Dr. W. P. Carr read the paper of the evening: Further considerations of the Anoci idea and the ductless glands. Discussed by Drs. A. F. A. King, T. A. Williams, A. B. Hooe, Groover and Carr.

Wednesday, February 11.—Dr. R. T. Holden, Vice President, presided; about 85 members present.

The Committee on Program was authorized to invite Dr. Frederic Pederson to address the Society.

Dr. L. Eliot presented in writing certain suggestions for widening the scope and increasing the usefulness of THE WASHINGTON MEDICAL ANNALS, which were referred to the Executive Committee with request for an early report.

An appropriation of $6.75 was made for stationery for use of the officers.

Dr. D. S. Lamb presented the following specimens: Foot of Egyptian mummy showing a *supernumerary toe*. The extra toe was fairly well developed and situated between the normal fourth and fifth toes, projecting from the dorsal surface. The foot was a slender, high-arched foot, as if from a woman of rank. Inquiry failed to ascertain from what part of Egypt it was obtained. As these supernumerary digits are usually bilateral, it is probable that there was a more or less similar abnormality on the other foot.

Monstrous fetus, Epignathus. Discussed by Drs. Hagner, Friedrich, A. B. Hooe and Lamb. See page 135.

Dr. J. D. Thomas reported a case of Aneurysm of descending aorta, with specimen. Discussed by Drs. Pfender, Frankland and Thomas. See page 146.

Dr. A. F. A. King read the paper of the evening: Chronic irritation, and fertilization of epithelial cells, the conjoined cause of cancer. Discussed by Drs. Mallory, Frankland, Macatee and King. See page 113.

WASHINGTON MEDICAL ANNALS.

Journal of the Medical Society of the District of Columbia.

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Editorial.

HISTORY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

THE WASHINGTON MEDICAL ANNALS, the official organ of the Medical Society of the District of Columbia, issued the first of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

THE ALUMNI MEDICAL SOCIETY OF GEORGETOWN UNIVERSITY has an active membership of 110 members and meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

CLINICAL SOCIETY.—Officers: D. W. Prentiss, President; F. L. Biscoe, Vice President; W. J. Mallory, Secretary-Treasurer; Censors: L. A. Johnson and J. D. Thomas.

Program of Meetings:

Meeting place.	*Essayist and Date of meeting.*	*Discussion by.*
Dr. Biscoe	Dr. Reichelderfer	Dr. Chas. S. White
The Farragut	April 9, 1914	
Dr. Prentiss	Dr. Donnally	Dr. Copeland
1213 M St., N. W.	May 11	
Dr. Wells	Dr. Clark	Dr. J. B. Nichols
The Rochambeau	October 12	
Dr. Barton	Dr. Mallory	Dr. W. E. Clark
1730 Conn. Av., N. W.	November 9	
Dr. Reichelderfer	Dr. J. D. Thomas	Dr. Hurtt
1721 Conn. Av., N. W.	December 14	

CLINICO-PATHOLOGICAL SOCIETY.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership after 15 years. A limited honorary membership of eminent medical men. Meets on the first and third Tuesdays of the month from October to May, inclusive. Officers: President, Dr. B. L. Hardin; Vice Presidents, Drs. Thos. S. Lee and Wm. Earl Clark; Secretary and Treasurer, Dr. B. M. Randolph.

January 21, 1914, the Society presented to the Garfield Hospital a bronze memorial tablet to the late Doctor Henry B. Deale, who died June 19th, 1912. Doctor Deale was an interne in the Garfield Hospital after his graduation in medicine, and was connected with its staff throughout most of his professional life. He was a founder of the Clinico-Pathological Society in 1888, and up to the time of his death, was a beloved and interested member.

THE FREEDMEN'S HOSPITAL MEDICAL SOCIETY meets on the second Wednesday of each month from October to May, inclusive. Its membership is composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. The present officers are E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

THE GALEN SOCIETY OF THE DISTRICT OF COLUMBIA.—Schedule of meetings, session of 1913–14:

1914.	*Place.*	*Essayist.*
Mar. 16	Dr. Borden, 1801 California Avenue	Dr. Titus.
Apr. 20	Dr. Taylor, The Cecil	Dr. Stuart.
May 18	Dr. Stuart, Army and Navy Club	Dr. Bogan.
Oct. 19	Dr. Kearney, 1229 O Street	Business Meeting. President's Address.

David W. Tastet, President; Carl Henning, Secretary.

GEORGETOWN CLINICAL SOCIETY; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

THE HIPPOCRATES SOCIETY, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year are L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

MEDICAL HISTORY CLUB of Washington, D. C., 1913–1914. Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H. W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig. Meetings:

1914.	*Essayist.*	*Host.*
Mar. 28	"History of the Laryngoscope," Dr. Bryan	Dr. Baker 1901 Biltmore St.
April 29	"Moon Myths in Medicine," Dr. White	D. C. Medical Society 1325 H St., N. W.

MEDICAL AND SURGICAL SOCIETY of the District of Columbia.—President, H. P. Parker; Vice President, D. P. Hickling; Secretary and Treasurer, L. Eliot; Recording Secretary, L. C. Ecker; Executive Council, A. R. Shands, O. A. M. McKimmie, L. Eliot, E. P. Copeland and L. H. Reichelderfer.

Society of Ophthalmologists and Otologists, Washington, D. C., 1913–1914. — Officers: President, J. J. Richardson; Vice President, L. S. Greene; Secy.-Treas., A. B. Bennett, Jr.

Membership.—Active Members: Drs. A. B. Bennett, Jr., J. H. Bryan, W. K. Butler, John W. Burke, Virginius Dabney, H. S. Dye, L. S. Greene, F. M. Chisolm, Carl Henning, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. P. Malone, W. B. Mason, M. E. Miller, S. B. Muncaster, Mead Moore, W. S. Newell, H. A. Polkinhorn, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive Members: Drs. W. N. Souter, C. W. Richardson, D. K. Shute, W. H. Wilmer, Wm. H. Fox.

Meetings are held on the third Friday in each month from October to May, inclusive.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

The Walter Reed Medical Society meets on the fourth Thursday of every other month, from September to May inclusive. It is composed of physicians located in the eastern part of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

The Washington Society of Nervous and Mental Diseases has inaugurated its seventh session by re-electing last year's officers as follows: President, Dr. Tom. A. Williams; Vice President, Dr. W. M. Barton; Secretary, Dr. W. H. Hough. The Society has a limited membership but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. It meets monthly on the third Thursday at the Cosmos Club or a member's residence.

The Women's Medical Society of the District of Columbia meets the first Tuesday of each month from October to May, inclusive. Officers: President, Sophie Nordhoff-Jung; Vice President, Ada R. Thomas; Recording Secretary and Treasurer, Phebe Norris; Corresponding Secretary, Elizabeth Sohon.

THE SECRETARIES of the other Medical Societies of this District are reminded that the ANNALS will publish the schedules of their meetings.

FISKE FUND PRIZE ESSAY.—The prize for 1914, $200.00, is for the best essay on "The causes, symptoms and early recognition of carcinoma uteri." Papers should be forwarded to Dr. Halsey DeWolf, 212 Benefed Street, Providence, R. I., by May 1, 1914. For further information address Dr. DeWolf.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

THE 19TH INTERNATIONAL CONGRESS OF AMERICANISTS.—We have been requested to invite attention to the fact that this Congress will meet in this city October 5 to 10, 1914. The meetings will be held at the new U. S. National Museum building under the auspices of the Smithsonian Institution, coöperating with other institutions and societies in this city. Drs. Frank Baker, G. M. Kober, D. S. Lamb and J. D. Morgan are members of the Organizing Committee. Dr. Ales Hrdlicka of the National Museum is the Secretary. The membership fee is $5.00, and the Associate Membership fee $2.50, payable to the Treasurer, Clarence F. Norment, 1851 Wyoming Avenue, N. W.

DR. G. LLOYD MAGRUDER, a member of this Society, died January 29, 1914. A further notice of his death will appear in the May number of THE ANNALS.

Dr. Magruder joined the Society October 1, 1873, was therefore a member forty years. He was number 15 in the seniority list of the amalgamated Society and Association.

MRS. HANNON, wife of Dr. S. L. Hannon, formerly a member of this Society, now a resident of Alexandria, Va., died January 26, 1914. She was buried in Alexandria.

THE MEDICAL WOMEN'S CLUB of Chicago publishes a periodical. The February number contains the following information: The officers include the chairmen of eight important committees. The club meets once a month at 5 P. M., has dinner at 6 P. M., after which papers are read, and it adjourns at 8. There are over 150 members.

THE AMERICAN VIGILANCE ASSOCIATION of Chicago (1632 McCormick Building) announces that the cost of the Report of the Chicago Vice Commission, bound in cloth, is 50 cents, postage 12 cents additional; Report of the Social Evil, Syracuse, N. Y.,

40 cents, including postage; Report of the Vice Commission of Philadelphia, 40 cents, including postage. The three, $1.25.

THE WEEKLY BULLETIN of the Jackson County Medical Society, Mo., January 31, 1914, contains the following editorial: "Inasmuch as the weekly attendance of the Jackson County Medical Society is rapidly increasing, and thereby the cubic air space for breathing in our auditorium is in like proportion decreasing, and further, since the rheumatic and neuralgic tendencies of certain members do not permit of free ventilation by the open-window method, would it be too great a sacrifice for the feminine members to remove their plumed hats, and the male members to refrain from smoking during the professional programs? Since the sessions are so long, and coffee is not served, it is believed that greater cleverness and fewer headaches would develop as a result of such chivalrous action."

WOMAN'S DISPENSARY, 716 FOUR-AND-A-HALF ST., S. W.—At a meeting of the Board of Directors, January 22, 1914, the following officers were elected: President, Dr. Louis A. Johnson; Treasurer, Mr. Alexander Muncaster; Secretary, Dr. Mary Holmes. The members of the board are: Drs. Louis A. Johnson, G. K. Baier, David Tastet, C. S. White and Mary Holmes and Mr. Alexander Muncaster, Mrs. M. J. Stroud and Miss Margaret Stephenson. This is one of the older dispensaries of the city and is still doing efficient work among the needy white and colored women of the southwest section.

DR. D. W. TASTET has been appointed a First Lieutenant in the Medical Corps, District National Guard. The Corps now consists of fourteen officers and eighty enlisted men.

NEW YORK SKIN AND CANCER HOSPITAL, Second Avenue and Nineteenth Street, New York City. Wednesdays in April at 4:15 in the afternoon, clinics on Syphilis by Dr. Bulkley; April 30, Dr. Bainbridge on Cancer. Free to physicians on presenting their cards.

MEDICAL RESEARCH WORK.—A circular has been received stating that an Index Office has been opened in Chicago, for indexing, compiling and abstracting literary and statistical matter, for the use of investigators and others. It may not be generally known to members of the Society that one of our members, Dr. G. J. Lochboehler, has been doing this sort of work for many years, and devotes most of his time to it.

THE SAMUEL D. GROSS PRIZE of $1,500 for the best original essay on Surgical Pathology or Surgical Practice, is open to members of this Society. Those desiring to compete should address the "Trustees of the Samuel D. Gross Prize, care of College of Physicians, Philadelphia, Pa., 19 South Twenty-second St., for further information."

REVIEWS.

THE DISEASES OF CHILDREN. By DR. HENRY ENOS TULEY, Louisville, Ky. C. B. MOSBY CO., St. Louis, Mo.

The second edition of Tuley's text book on Diseases of Children is very attractive from a typographical standpoint, and is amply illustrated. There is evidence of many changes since the first edition was issued. The author professes to have written the book for the use of the general practitioner in particular, and theoretical matters are not given the consideration which might be expected in a more ambitious text book. In spite of an immense amount of research work both here and abroad, which has conclusively proven the error of considering proteid the chief offending factor in rendering cows' milk indigestible to the young infant, Tuley clings to this hypothesis in his treatment of the feeding problem. A valuable feature is an appendix dealing with various methods of milk modification and a consideration of medical milk commissions, the production of certified milk, and other matters of interest in relation to public health. To the medical man not interested in the teachings of the newer school of infant metabolism Tuley's work will be most valuable and most helpful.

JOHN FOOTE.

MORTALITY STATISTICS FOR 1911, Census Bureau.—The deaths in the United States were 839,824 in the registration area; the population of this area 59,275,977, or 63.1 per cent. of the total population of the United States. The death rate was 14.2 per 1,000, which was the lowest death rate so far recorded for the registration area. Kentucky and Missouri have been added to this area. Of the deaths 92.9 were of whites; 17.8 per cent. of all deaths were of children under one year; 25 per cent. under 5 years; 26.6 per cent., 65 years and over. The death rate for the District of Columbia was 18.7; 15.5 white, 26.6 colored. The death rate for foreign born whites was greater than native born.

Mortality statistics for 1912.—Deaths in registration area 838,251, somewhat less than in 1911. Death rate 13.9, the lowest yet recorded. Deaths of whites, 779,135; colored, 59,116. Males 54.8 per cent., females 45.2 per cent.; 24.4 per cent. were children under 5 years, 17.6 per cent. under one year. Deaths from tuberculosis had been reduced 25 per cent. since 1900.

D. S. LAMB.

RECENT PUBLICATIONS BY PHYSICIANS OF THE DISTRICT OF COLUMBIA.

P. M. Ashburn, U. S. A.; Trip to China; *Military Surgeon*, February.

N. P. Barnes; Cerebro-spinal meningitis; some atypical manifestations and a new diagnostic aid; *Interstate Medical Journal*,

December, 1913; abstracted in *Jour. Med. Soc., N. J.*, January, page 23.

W. M. Barton; Application of salvarsan in non-syphilitic diseases; *Med. Times*, January; also The anatomist of Rembrandt; *Jour. A. M. A.*, Feb. 14, page 554.

F. B. Bishop; The continuous current of electricity as an important factor in the treatment of disease; *Interstate Medical Journal;* also case of Chronic intestinal catarrh of neurotic origin; *Va. Med. Semi-Mo.*, March 13, page 594.

W. P. Carr; The age of credulity; *Hospital News*, January, page 11.

H. W. Clark and S. D. Gage; Hygienic condition of air in certain textile mills with reference to influence of artificial humidification; *Amer. Jour. Pub. Hlth.*, December.

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PERSONAL NOTES.

Dr. Louis Hopewell Bauer, M. R. C., U. S. A., was married December 27, 1913, to Miss Helena Meredith, of Jamaica Plains, Mass.

Dr. W. C. Braisted, Medical Inspector, U. S. Navy, has been appointed Chief of the Bureau of Medicine and Surgery, Navy Department.

Dr. Wm. Bedford Brown died in New York City March 9, age 49. He was a brother of Glenn Brown, the architect, this city, and son of the late Dr. Bedford Brown, who was elected an active member of this Society March 14, 1866, and an honorary member in 1895 ; he died in Alexandria, Va., in 1897.

Dr. W. B. Carr was married February 2 to Mrs. Tevis M. Elliott of this city.

Dr. George W. Davis, anesthetist at Freedmen's Hospital, died January 14.

Dr. R. L. De Saussure, of this Society, has passed the State Board examination of Virginia.

Dr. J. A. Dowdney, Past Asst. Surgeon, U. S. Navy, has been transferred from the Bureau of Steam Engineering to the Atlantic Fleet.

Colonel Wm. A. Gorgas of Medical Corps, U. S. A., has been appointed Surgeon General, U. S. A.

Mrs. Mary Isabella Johnson, mother of Dr. Louis A. Johnson, of this Society, died in this city February 13. She was also the widow of the late J. Harrison Johnson.

Dr. L. A. LaGarde, Colonel, Medical Corps, U. S. Army, has published a work on Gunshot Injuries; pages 467, illustrations 159; price, $4.00.

Dr. J. F. Mitchell attended the meeting of the Southern Surgical Association at Atlanta, Ga., December 16 to 18, 1913, and read a paper on Pyloric Stenosis in Infants.

Dr. John J. O'Malley, Asst. Surgeon, U. S. Navy, was married January 7 to Miss Mildred Fendall Jones.

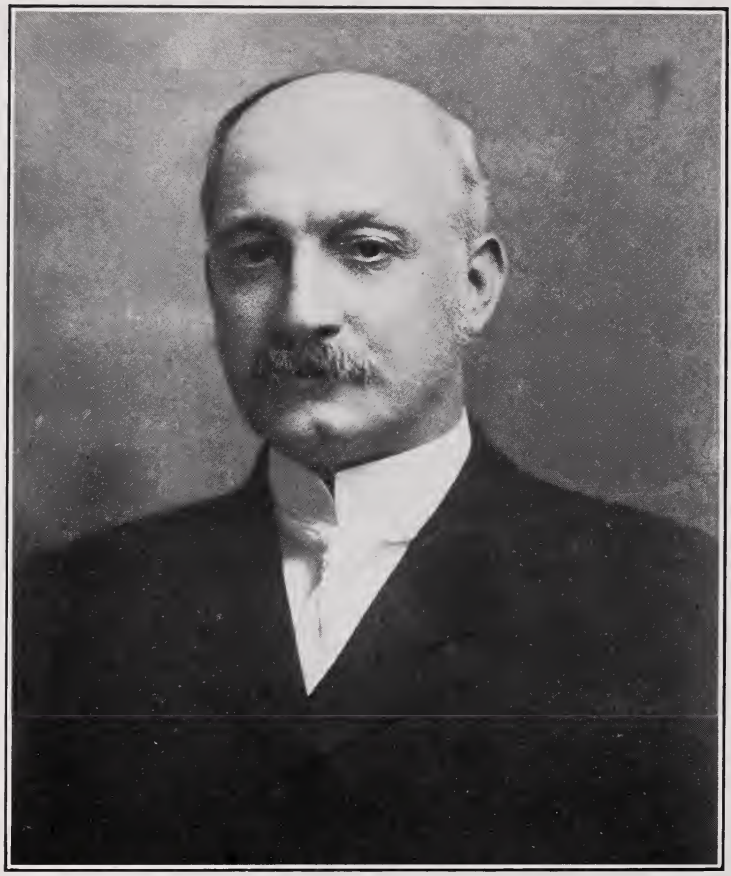
Mrs. Emilie P. Sellhausen, mother of Drs. E. A. and H. A. Sellhausen of this Society, died January 15.

Drs. I. S. Stone and Frank R. Hagner also attended the Southern Surgical Association at Atlanta and took part in the discussions.

D. C. F. Stokes, late Chief of the Bureau of Medicine and Surgery, U. S. Navy, is now Medical Director, on duty at the Naval Hospital, Philadelphia.

Dr. C. L. Wilbur attended the meeting of the National Conference on Race Betterment at Battle Creek, Mich., January 8 to 12, and read a paper on the Need of thorough birth registration.

Dr. W. C. Woodward attended a meeting of the Association for the Study and Prevention of Infant Mortality, November 14 to 17, 1913, and read a paper on the Use of vital statistics in preserving infant life.



DR. G. LLOYD MAGRUDER.

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MEDICAL ANNALS

AN ILLUSTRATED STUDY OF THE FUNDUS OCULI.*

By Wm. T. Davis, M. D.,
Washington, D. C.

It is believed that the general profession should give more attention to the study of the fundus oculi on account of its great value in diagnosis The following is with this idea in view. It is not correct at the present time to think of the ophthalmoscope as a difficult instrument to master. This is not so. The older instrument did require months of patient effort before one could see even partially satisfactorily with it, but now with the electric ophthalmoscope one may see the fundus quite satisfactorily after a few trials. Interpreting and appreciating what one sees is, of course, a different matter. There are, however, many excellent atlases one may study, so there is no legitimate reason why one may not add this most valuable aid to one's diagnostic armamentarium. One does not need to become a specialist in order to learn the grosser lesions of the fundus. It is these grosser lesions which will here be considered.

First we will discuss the normal fundus and its normal variations. The first plate is that of a brunette. Here there is much pigmentation in the epithelial layer of the retina so that the chorioidal vessels do not show through. Thus we have a uniform color throughout. We note the difference in the size of the retinal arteries and veins; the former being smaller and lighter in hue and having the normal light streak. We know the normal vessel wall is perfectly transparent, and that what we really see is not the vessel wall itself but the column of blood within it. So should the vessel wall in any way be perceptible it shows a beginning pathological change.

The Optic Disc, Nerve Head or Papilla.—This is the intraocular portion of the optic nerve with the central vessels of the retina coming from out its center. The white disc-like effect is caused by the fact that we are in reality looking down into the cylindrical canal in which lie the nerve fibers. A few millimeters

* Read before the Medical Society January 21, 1914.

within this canal lies the lamina cribrosa through whose openings the nerve fibers pass, leaving here their medullary sheaths. So, from the lamina cribrosa the nerve fibers are naked and almost perfectly transparent. As they pass over the edge of the disc to form the fibrous layer of the retina they lie thickest on the nasal side. Thus it is here that the outline of the disc is slightly blurred as compared with the temporal side where the nerve head is very sharply outlined.

The Scleral Ring, a white ring, seen quite, or partially encircling the disc, is caused by the white fibers of the sclera showing through the here, atrophic chorioid.

The Chorioidal Ring, a black ring, is caused by a heaping up of the pigment of the chorioid.

We note that the macula region looks somewhat redder than the surrounding fundus while about it lies a pale whitish ring. The redder appearance is due to the fact that the pigmentary coat of the retina is here thicker and denser, giving us a dark red reflex. The retina is almost perfectly transparent, all but the outermost coat, the layer of pigment epithelium. Anatomically this outer layer belongs to the chorioid but embryologically it belongs to the retina, as this membrane is derived from the epiblast while the chorioid is derived from the mesoblast. This layer of pigment epithelium, while it is not actually concerned in vision, yet plays an exceedingly important part in it.

We must bear in mind how important the retina is as a membrane for observation. Here we have before us brain tissue, as it in reality is, in which the very earliest changes may be observed, because the first pathological changes which do take place produce at once an opacification of slighter or greater extent. To appreciate these very early inflammatory changes in this membrane, then, one must rely on observation with the ophthalmoscope.

We will now observe the fundus of a blonde and note what a very marked contrast there is. Indeed one can but be startled at the great difference. The nerve looks lighter in color, temporal side lighter with dark spots, the openings in the lamina cribrosa showing through. A yellow fundus reflex is present instead of the diffuse red of the preceding one. Here we see most distinctly the chorioidal vessels and note how decided is the difference in the appearance of the two sets of vessels; the chorioidal vessels appearing flat and ribbon-like and anastomosing very freely; dimmer in outline and very much more numerous. The macula appears as a cherry red spot with no encircling reflex. This macula reflex is a whitish, indefinite areola surrounding the macula region. The retina is thinner at this point, in consequence of which there is a dimpling of its surface and thus a reflection of the light rays from the periphery of this dimple. The retina being a transparent membrane, the light will be reflected from its

surface just as it is from the surface of clear water. This same phenomenon is observed where the retina lies over a bloodvessel. It is slightly elevated by the vessel, and when we throw the light in with the ophthalmoscope we get the same reflection as described at the macula. These are very characteristic, and one soon learns not to be confused by them. The very red appearance of the macula is due to the contrast with the much lighter surrounding fundus.

Another variation of the normal fundus in the following plate * is the "tesselated fundus." There are two pigmented membranes in the eye—the pigment ephithelium of the retina and the pigment in the chorioid. The latter membrane has many specialized cells in it containing a greater or lesser amount of pigment, the chromatophores. Depending on the amount of pigment in these cells and in the cells of the pigment epithelial coat of the retina we have either a dark fundus, which may be slate gray, as in the negro, or the fundus may be totally without pigment, giving a yellowish pink reflex, as in the albino. All gradations between these two extremes may be noted. The chromatophores are capable of ameboid locomotion and consequently wander from places to place in the chorioid under certain pathological conditions. We shall have occasion to refer to this later. Now as the chorioid coat is, in this plate before us, quite rich in pigment we see between the lighter red of the chorioidal vessels, dark, red islands of pigmented chorioid, the so-called "tesselated fundus." This is characteristic in appearance and a common form of fundus.

We next have before us medullated nerve fibers of the retina.

We remember that the fibers of the optic nerve commonly lose their medullary sheath at the lamina cribrosa. This does not always occur, however, and occasionally this covering of the nerve extends a certain distance on the fibers as they spread out to form the fibrous coat of the retina. This gives the characteristic appearance of brilliant white, gas-flame like areas usually proceeding from the disc outward. They have a shimmering appearance like watered silk. The retinal vessels lie beneath, thus showing that the vessels are in part covered by the fibrous coat of the retina. This is an important fact to be remembered.

Leaving now the normal fundus we proceed to study the pathological one, taking up first optic neuritis. We are able to see the very earliest changes taking place in the inflamed nerve. In the plate before us we see that the nasal edge of the disc is slightly blurred; has the appearance of being fogged. The nerve head is redder, slightly congested, on the nasal half. The temporal half is about normal. About the disc is a slight halo of fog, looking not unlike a halo about the moon on a misty night. This is due to the earliest inflammatory changes taking place in the retina; that is, the retina is beginning to share in

* The lantern slides are not reproduced.

the inflammation. The earliest changes are cloudy swelling and edema, and we immediately see the normally transparent retina becoming very slightly opaque. So we appreciate how valuable are the signs of early inflammation in the retina and how easily one may see them. All else is quite normal in this fundus. Only do we see the slightly blurred nasal half of the nerve and the very faint halo of beginning inflammation about the disc.

Proceeding to the next plate we see the same process further advanced. The whole nerve head is blurred in outline, whiter than normal and having a striated appearance, the striae radiating away from the disc and extending quite to the periphery, though growing fainter and fainter as we get farther from the disc. This striated appearance is due to cloudy swelling and edema of the fibrous layer of the retina. Remembering that the nerve on reaching the retina spreads out sheaf-like, we can easily appreciate why we have this striated appearance in early inflammation of this membrane. This plate also shows very beautifully the cloudiness of the retina as we closely observe the cloudiness of the retinal vessels. Where these vessels dip down slightly into the retinal tissue we note that they are covered with a faint haze, a cloud. The edges of the vessel are not sharply outlined and are lighter in color and the light streak is absent or widened. These changes increase in intensity as we approach the disc.

In inflammations of the fundus we find numerous white spots, some small, some brightly shining, star-like, almost; some large and plaque-like. As these changes are so common let us here digress for a moment to consider to what they are due. In ratio to the severity of the inflammation they are due to: edema, hyaline degeneraton, fatty degeneration, fibrinous or plastic exudation, connective tissue, calcareous deposits, varicose thickening of the nerve fibers, and proliferation of the *glia* tissue. While all these may cause white spots in the fundus the ones commonly met with and which are of most practical importance are edema, hyaline and fatty degeneration, exudations and connective tissue.

Is there another tissue in the body where we may see *in vitro* and with the naked eye such early evidences of inflammation as cloudy swelling, hyaline and fatty degeneration? These early changes may be appreciated in the retina, as we have observed, because of its normal transparency, and this normal transparency becoming immediately opacified from the slightest possible misting to being quite opaque. Now, having observed the lesser degrees of neuroretinitis, let us note the changes in the following several plates as exemplifying the most marked changes.

Here is a nerve head much swollen as evinced by the blood vessels dropping off the disc, as it were. It has a decidedly and very marked striated appearance and numerous white spots scattered about on the disc and in the area surrounding the disc; some being brilliant white and sharply circumscribed, others

dimmer and fading off gradually into the surrounding tissue. The former are spots of fatty degeneration of the retina, the latter spots of exudate in the deeper layers of the retina. Scattered about thickly on the disc are numerous minute hemorrhages having a striated appearance, thus showing that they are in the the fibrous layer. All the small vessels in the retina have disappeared; the larger ones completely disappear in the swollen, edematous retina in their recurrent portions. Veins tremendously engorged; arteries very small with no light streak in places; very broad light streak in others; showing beginning changes in the wall.

In another plate we note the position of the disc occupied by a large plaque, probably six times the size of the disc and having a dead, white appearance. This is an enormous exudate. Numerous hemorrhages are seen about its periphery. The vessels disappear in this plaque as they approach the neighborhood of the disc and are no more seen. In another part we note the whole fundus having a marked striated appearance beginning at the disc and extending well into the periphery, *i. e.*, swelling and edema situated particularly in the fibrous layer. Along the sides of several of the vessels are white streaks caused by inflammatory changes in the vessel walls and a fibrinous exudate undergoing coagulation. This may eventually leave only a white, cylindrical, fibrous cord where once was a vessel. This is the ultimate and most marked change in a vessel. All gradations may occur, beginning with very slight changes as evinced by abolition, or broadening, of the light streak, fine white lines on either side of the vessel, and so on to the complete abolition of the vessel, leaving only white, cylindrical cords of fibrous tissue. These vascular changes just described are those noted in arterio-sclerosis in the vessels of the fundus.

We may say that here only, above all places, may these earliest vascular changes be observed. Need one dwell upon the importance of this when today we are so diligently seeking light on this most important subject of arterio-sclerotic changes?

Let us now consider briefly the ophthalmoscopic appearance of atrophy of the optic nerve. This we usually notice first on the temporal side of the disc; this being that part of the nerve where the changes may be first seen. Following a neuritis, neuroretinitis, or other inflammation in the fundus, the inflammatory changes very gradually subside and the nerve very gradually becomes paler and paler, the outline more sharply defined until at the last we have a dead-white, punched-out appearance that, seen once, is always remembered. Thus in the plate before us the nerve head is perfectly white, sharply outlined and without any color whatever. Nothing but the large trunks of the vessels pass over its surface. The dark spots seen on its surface, the openings in the lamina cribrosa, are particularly marked. The vessels of

the fundus are represented only by cylindrical white cords, save one. In this there is still left a small, red streak in the center of the vessel; that is, there still remains a small column of blood in the vessel, though the walls are enormously thickened In another plate before us we have a characteristic appearance in the vascular changes, the "silver wire" artery. The light streak is very greatly broadened so that the vessel looks under the ophthalmoscope like a silver wire of large caliber. This appearance is likewise due to inflammatory changes in the vessel wall.

In still another plate we have an earlier stage of atrophy, an atrophy due to a neuroretinitis, retinic atrophy, and this differs from the former description in that the disc is hazily outlined. This means that we have a deposit on or about the disc of post-inflammatory material, connective tissue, organized exudate, etc., which prevents the punched-out appearance described in primary atrophy. Neither is the disc in the retinic atrophy so dead white but, as in the plate before us, it may be quite gray, greenish gray, yellowish, etc., depending on the kind and amount of inflammatory material there. The smaller vessels are the first to disappear from the surface of the disc and the fundus generally, and finally only one or two, possibly more, of the larger trunk vessels remain.

The following several plates show the characteristic fundus changes in albuminuric neuro-retinitis. This condition when typical is very easily diagnosed by ophthalmoscopic examination. The papilla shows the changes described in a retinitis, excepting that here we have numerous hemorrhages scattered about on the disc and in its immediate neighborhood. Most of these hemorrhages present a striated appearance indicating their location. Radiating from the disc are many white striae showing fatty degeneration of the fibers. On the disc are numerous white, round areas of exudate. The disc is redder than normal, and minute inspection shows this to be due to new formation of small bloodvessels; that is, organization of the inflammatory material.

The macula presents the most characteristic appearance. Radiating from it, the typical star-shaped figure, are brilliant, white, rather thick and short rays. Scattered about all over the fundus are brilliant, white spots, areas of fatty deposits, and numerous large and small hemorrhages particularly marked at the macula. In several places are very large plaques of yellowish material several disc diameters in extent. These are composed of exudate. In other places may be noted a dimly-outlined grayish mottling due to exudate in the deeper layers of the retina or in the chorioid. The smaller retinal vessels have quite disappeared. The veins are greatly engorged, dark and tortuous In the recurrent portions vessels disappear in the swollen and edematous retina. The arteries are small and narrow, the light streak wanting in some portions, much broader than in others. Some

arteries are represented only by white cords. In some places the vessels may be seen to be covered by patches of exudate. In others the vessels lie upon the exudate. In one plate the retina has undergone complete degeneration at the macula as shown by numerous small, white spots occupying this situation. To call this condition an inflammation, is technically incorrect. The changes are primarily vascular and due to the toxemia. The other changes are secondary to this. The edema and fatty degeneration are the results of interference with nutrition. The exudation and hemorrhage are, of course, due to changes in the vessel wall. Later on inflammatory action does take place; organization of the inflammatory material and formation of connective tissue.

We will next consider the changes in the chorioid. This, we remember, is a membrane made up almost entirely of bloodvessels and rich in pigment-bearing cells, the chromatophores previously mentioned. The functions of the chorioid are primarily the nourishment of the outer layers of the retina. The pigment cells play an important part also in the function of this membrane. Inflammation in this structure in the earlier stages shows with the ophthalmoscope grayish areas, dim and indefinite in outline, fading off gradually into normal tissue; some of the spots being small and hardly perceptible, others larger and more marked. To see the condition in this stage is not common, as no subjective symptoms are provoked, unless one of the areas should be at the macula. These spots are caused first by an exudate in the chorioid. As any interference in the chorioid always reacts on the outer layers of the retina we soon have added to this an area of edema and cloudy swelling in the retina.

Soon now we begin to note a further change occurring in this area. The pigment of the chorioid commences to thin out, a very little at first, so that we have a rather well outlined, greenish white, rounded spot. The following plate shows the next advanced stage of the inflammation; areas that are very white and very sharply outlined; that is, the pigment of the chorioid, and of the pigment epithelial coat of the retina, as this is dependent on the chorioid for its nourishment, has become atrophic, thus allowing the white sclera to show through. Traversing these white areas the chorioidal vessels may be seen. The retina is quite atrophic over these spots. The next plate shows a more advanced stage yet, the terminal appearance of the condition. These above-described white areas have become heavily pigmented about their borders. Pigment of inky blackness. Some spots are completely black, so that we have great contrasts. White, shining spots, with black edges; perfectly black spots; grayish areas of beginning chorioiditis. In other places may be seen yellowish, white streaks with edges not sharply outlined. These are the sclerosed chorioidal vessels. After this has taken place the retina

undergoes complete atrophy, the retinal vessels disappear, all except one or two of the large trunks. The nerve undergoes atrophy.

The plates here used to illustrate these remarks are by Oeller. They are lithographed from oil paintings of the fundus and are very true to life. These descriptions are not intended as technical discussions of the changes seen in the fundus in the described conditions, but rather intended as a help to those in other branches of the profession interested in this subject and to stimulate the interest of those not so interested.

Dr. S. B. Muncaster said that the address had been interesting and instructive. It might be of interest to the general practitioner to know that in atrophy of the optic nerve good results may be obtained by withdrawal of the toxic habits of the individual and by other appropriate treatment. We may also secure good results in some cases of albuminuric retinitis, especially in the puerperal form. Physicians are apt to regard these conditions as hopeless.

Dr. W. P. Carr had found much of interest in the paper and in the pictures. It was unfortunate that there were not more members present. He commented on the folly of so many in not coming to hear papers upon special subjects ; such papers are of more importance to the general men than to the specialists themselves. The first time he had ever seen the optic fundus he saw an albuminuric retinitis.

ANOTHER CASE OF POLYPOSIS GASTRICA (POLYADENOMA).*

By D. S. Lamb, A. M., M. D., L.L. D.,

Washington, D. C.

In the *Journal A. M. A.* of November 29, 1913, page 1960, is an article on this subject by Dr. J. S. Myer, of St. Louis, Mo. He also reports a case in his practice. The article covers the subject so well that I need to do little more than report another case.

In 1868 Dr. D. H. Brower, then an Acting Assistant Surgeon, U. S. A., stationed at the Howard Grove Hospital, Richmond, Va., sent to the Army Medical Museum two specimens ; one a stomach, the other a portion of diaphragm. The history, all too brief, simply stated that they were from a freedman, age 30, from Henrico Co., Va., who had been in hospital thirteen days ;

* Reported to the Medical Society February 18, 1914.

Gastric Polyposis.

was much emaciated, eyes were yellow, he had no appetite, vomited food almost as soon as swallowed ; had no tenderness nor pain, but had persistent hiccough. At the autopsy the lungs and heart were found to be normal ; the stomach contained a "coffee-ground" fluid, and the diaphragm was studded with minute nodules.

It has always been a rule at the Museum that new growths be examined microscopically, but sometimes the rule was not observed, and Dr. J. J. Woodward, U. S. A., who was at that time in charge of the medical section of the Museum, made a diagnosis of "villous cancer" of the stomach, with secondary growths on the diaphragm, and without having a microscopical examination made ; at any rate there is no record of such an examination. The idea of villous cancer was taken from Rokitansky.* The apparent primary and secondary conditions in the stomach and diaphragm, as well as the enlargement of the lymphatic nodes at the gastric curvatures, with the history of "coffee-ground" fluid in the stomach, and emaciation, were doubtless the basis of Dr. Woodward's diagnosis. The stomach mucosa was thickly beset with dendritic polypoid growths, which formed large masses at the pylorus ; the nodes at the curvatures were somewhat enlarged.

On seeing the article by Dr. Myer, and his illustrations, it was suspected that Dr. Brower's specimen might not be carcinomatous, and microscopical examination was made by the present Curator, Major E. R. Whitmore, U. S. A., who makes the following record of results : "Histo-pathological diagnosis ; Polyposis gastrica (Polyadenoma). The nodular appearance on the surface of the peritoneum is due to thickened areas in the muscle of the diaphragm. There is no epithelial tissue in the nodules. No evidence of malignancy."

The fact that enlarged lymph nodes were found at the curvatures is not unusual in these cases of gastric polyposis.

Dr. Myer's research shows that while single polyps or a few polyps in the stomach are occasionally found, the cases in which a multitude of them is found, and this is what constitutes polyposis, are quite rare, or at any rate, they are very rarely reported. This rarity justifies the present report.

Of the cases reported, all but three were from persons over 59 years old ; one at 34, one at 36, and, in Brower's case, one at 30 years. It is possible, of course, that as this man was a freedman, he may not have known his age.

In more or less of the cases there was also a chronic gastritis.

* Rokitansky's Pathological Anatomy, English translation, Sydenham edition, 1854, London, Vol. I, pages 283 and 290.

CASE OF BREECH PRESENTATION AT 8½ MONTHS COMPLICATED BY FIBROIDS; CONFIRMED BY RADIOGRAPHS.*

By Prentiss Willson, M.D., and John Hunter Selby, M.D.,

Washington, D. C.

Case History.—L. S., white, age 35, 1-para; first seen by Dr. Willson, September, 1913.

Antecedent History.—Unimportant prior to time of pregnancy, except that for ten years past her periods had been characterized by considerable flow, and that she had been told by two distinguished gynecologists that she had two fibroid tumors of the uterus which might delay her conceiving, but which would probably have no effect when pregnancy occurred.

Present Condition.—Her last menstrual period began May 15, 1913. During July and August there was some intermittent bleeding which only once, however, assumed serious proportions. When seen by Dr. Willson, September 2, the pregnancy then being of about 3½ months' duration, the fundus uteri was distinctly felt two fingers' breadth above the umbilicus. The two fibroid masses were felt in the fundus, the smaller, pedunculated, about the size of a hen's egg and situated on the left anterior quadrant of the fundus; the larger one, intramural, about the size of the closed fist, situated in the right lateral border of the uterus midway between the insertion of the right tube and the summit of the fundus.

The progress of the pregnancy was uneventful, and the tumors increased little, if any, in size, from the time of the first examination. The thickness of the abdominal wall, the amount of amniotic fluid, and the presence of the fibroids, all tended to make accurate palpation of the fetus difficult, but when examined three weeks before term, the available evidence pointed to the presence of a breech presentation in the left sacral position. At this time Dr. I. S. Stone saw the patient in consultation, and agreed to the tentative diagnosis of a breech and also to the statement that it was impossible to be absolutely certain about the matter. Despite the fact that the pelvic measurements were perfectly normal, that no tumor mass could be made out in the uterus, except the two mentioned, and that the cervix was much softer and more dilatable than could be reasonably expected considering the age of the patient, it was thought that a breech presentation was under the circumstances such a serious menace to the life of the baby as to indicate possibly considerable radicalism in the management of the labor. Absolute certainty regarding the diagnosis of breech presentation became, therefore, a matter of

* Reported to the Medical Society February 18, 1914.

necessity. This diagnostic problem was then and there put up to Dr. Selby for final solution by means of radiography.

Dr. Selby reported as follows, February 10, 1914:

Obstetrical case to determine position and presentation at the the 8½ month. Stereo-radiographs made in two positions. The outline of the fetal skeleton was seen to occupy a longitudinal position in the uterus, the convexity of the spine being toward the left. The fetal head occupied the position opposite the 1st, 2d and 3d lumbar vertebrae. The occipito frontal diameter formed an angle of ninety degrees with the maternal spine. The fetal pelvis occupied a position at the brim of the true maternal pelvis and the lower extremities were in the right iliac fossa. Approximate measurements of fetal head: Occipito-frontal 5¼ inches; bi-parietal 4¼ inches. The maternal pelvis was of large size and ample to accommodate the head in an occipital presentation.

Diagnosis.—A breech presentation, left sacral posterior position, confirming the tentative diagnosis by Drs. Prentiss Willson and I. S. Stone. There was no visible shadow of fibroids in the lower portion of the uterus. A faint shadow near the dome suggested a tumor mass in that situation.

Dr. Groover said that it would seem to him that the field of application of skiagraphy in obstetrics would be rather limited. In the first case presented, the presentation was certainly by the breech when the picture was taken, but it need not necessarily be a breech when labor begins. As Dr. Selby had pointed out, one would need to be very careful about attempting to determine by this means diameters either of head or of pelvis. We are often unable to determine just how shadows are projected and whether we are dealing with the exact planes of the diameters.

Dr. Bowen said that it is very rare for a breech to change to a head presentation after the eighth month of pregnancy; it would be a medical curiosity for such a change to take place at the time of labor.

Dr. Pfender wished to compliment Dr. Selby upon the plates and for having made the first presentation of this subject before the Society.

Dr. Moran spoke of the use of the x-ray method for the diagnosis of pregnancy. He had recently seen a case with presumptive evidence of pregnancy at the seventh month. Examination showed that there was also present a tumor which made the diagnosis of pregnancy uncertain. If the x-ray method had been used anxiety would have been at once relieved.

Dr. Selby could not agree with Dr. Groover in his statement that skiagraphy has a limited field of usefulness in obstetrics. When we consider how much satisfaction this method gives, not only to the patient but also the clinician by demonstrating the

correct ratio of measurements of the head and pelvis, that feature alone justifies the method. But in addition to this, the diagnosis of many complications may be resolved, and thus in some clinics the x-ray examination is regularly made.

As to the expense, this may vary; while expense is inevitable it need not be insuperable. If stereoscopic plates are made we can come pretty near deciding the exact position of the head and thus may decide on the measurements. Good pictures may be made in the fifth month if the abdomen is thin and there are no fibroids; the method is very satisfactory in the sixth month.

TONSILLECTOMY, ITS INDICATIONS AND CHOICE OF OPERATION.*

By Wm. H. Huntington, M. D.,

Washington, D. C.

I will merely touch briefly on the histology of the tonsil and adenoid. Their structure is lymphatic, and of hypoblastic origin. The pharyngeal and faucial tonsils, like other lymph glands, are a collection of lymph cells enmeshed in a delicate, fibrous reticulum. Unlike other lymph glands they are peripheral in their distribution, or, better put, they are exposed glands. The pharyngeal tonsil differs from the faucial in that it has no capsule, and is distributed in folds perpendicularly on the posterior pharyngeal wall, while the faucial tonsils are encapsulated, and contain many crypts which run to, or nearly to, the capsule. Both are covered by mucous membrane on their exposed surfaces.

Both of these bodies are normally present and have a definite function. They only give trouble when their resistance to invading bacteria has been overcome and they succumb to the unwelcome guests.

Wright, Goodale and others, in their experiments, have come to the conclusion that the bacteria attacking a healthy tonsil do not penetrate the epithelium. The hypothesis offered is that the destruction of the organism is accomplished through a biochemical action, the epithelium throwing out an antagonistic ferment which overcomes the organisms, and if the tone of the epithelium is normal there is, as Ballenger puts it so aptly, "an equilibrium between immunity and infection. When the cellular tonicity is impaired the equilibrium between immunity and infection is lost and infection occurs."

Diseases Attributable to the Tonsil and Adenoid.—Locally, we have rhinitis, adenitis, pharyngitis, retropharyngeal abscess, etc.

* Read before the Medical Society February 18, 1914.

With these are very often disturbances of the middle ear and tubular catarrh, due usually to the extension through the eustachian tube, enlarged cervical glands, Riggs disease, etc.

Authorities are now of the opinion that the tonsil in its diseased state is the portal of entry for various systemic infections, such as rheumatism, endocarditis, tuberculosis, acute nephritis and chorea. Many pains of obscure orign can undoubtedly be attributed to tonsilar infection. When many other remedies have failed the removal of the tonsil has brought relief in so many cases that it leaves little doubt that the tonsil is a remarkably apt distributor of its pernicious wares.

Children with diseased tonsils who are unfortunate enough to develop diphtheria are known to have much more severe infections than children with previously healthy tonsils. And even after the subsidence of the clinical symptoms their throats often remain *positive* for very long periods and they become *carriers*.

Personally I have not seen many cases of diphtheria, but I have asked men who have seen a great deal of it, and they tell me that as far as they can remember they have never seen a case of faucial diphtheria develop in a person who had had the tonsils removed.

In a late number of the *Journal A. M. A.*, in reviewing an article by Clause, of Berlin, I find an interesting statement. He says that Alexander, of Vienna, has reported the significant fact that during a severe epidemic of scarlet fever and measles in Vienna the children whose tonsils had been removed were spared by the epidemic.

The occurrence of acute nephritis either during or following an attack of tonsillitis is far from uncommon ; in fact its frequency would probably astound us if we made careful laboratory and clinical examinations of all cases. Bingham, in the *Archives of Pediatrics* for December, 1910, reports a case of acute nephritis which followed acute follicular tonsillitis ten days after beginning convalescence. Other men have noted and commented upon this complication, and it is of sufficient importance to warrant serious consideration. Cheadle, of London, designates the adenoids and tonsils as the "Rheumatic Cycle" as applied to children. He reconsiders rheumatism, tonsillitis, chorea, endocarditis, etc., as stages in the cycle.

A child with chorea in all probability has rheumatism or will develop it, and children with endocarditis are very likely to give a history of previous rheumatism or chorea, or if not they very likely will develop one or both of these later on.

Rührah says, "chronic heart lesions affecting the valves are nearly always of rheumatic origin."

Endocarditis, rheumatism and chorea in children are seen so often associated or following one another, and so often a history of diseased tonsils is obtained, as to leave little doubt as to the guilt of the oft indicted tonsil.

The careful examination of children's throats and ears has been repeatedly urged, as a part of the general examination, by such pediatricians as Holt, Jacobi, Koplik, Hutchinson and others, and undoubtedly many cases that present vague symptoms would be diagnosed positively were such careful examinations always made. Todd, of Minneapolis, in the *Journal A. M. A.*, for August 27, 1910, mentions the fact that neuralgias in the region of the tonsil, side of the head, neck, teeth, gums, or antrum of Highmore, may be and frequently are due to diseased tonsils. When we consider that the tonsil is the largest body in this vicious lymphatic circle of infection, and its frequent irritations, the abundance of infectious organisms that are always on the job, and its direct drainage into the general circulation, it seems a wonder that we do not all die young.

Indications for Operation.—Briefly we may say that the general indications for operations are as follows: Tonsils should be removed when found in a chronic state of inflammation and with a history of repeated attacks of tonsillitis or quinsy. The operation should never be done sooner than a week or ten days following the subsidence of an acute attack.

Grosvenor in the *Journal-Lancet* for December 1, 1913, presents a number of illustrations of microscopic sections of removed tonsils, and remarks on the frequency with which infectious material is found in their substance: Ray fungus present in 15 per cent., tubercle bacilli present in 5 per cent., bone tissue and cartilage in three cases.

Nearly twenty years ago the question was first forcibly brought to our attention as to the relation of tonsillitis to articular rheumatism. The German specialists on military hygiene and sanitation were among the first to call our attention to this matter, although it had been urged by men in this country prior to that time. Dr. Paul Schichold, in a German medical journal of February, 1910, reported seventy clinical cases of articular rheumatism, in 75 per cent. of which pus-pockets were found in the tonsils.

Guerich, following this line of work, not only demonstrated pus in the tonsils of his cases, but reported 25 per cent. permanent cures by "tonsillar treatment." What this treatment was I do not know, but, if it was local treatment or tonsillotomy, I can only say that had he done complete tonsillectomies on these cases he would no doubt have had a much larger percentage of cures to his credit.

Schichold also mentions that even cardial complications, if recent, are favorably influenced by removal of the tonsil.

Adenoids should be removed when they are so large as to obstruct proper breathing, when there is a chronic adenitis, and in cases of middle ear disease with obstruction of the tubes. One or two attacks do not necessarily impair the tonsil to such an ex-

tent as to necessitate its removal; but with repeated attacks there are changes in the tissue which impair its normal function. It is then that the tonsil becomes a menace to the general health and should be removed entirely within its capsule.

A point that should be emphasized is the fact that a tonsil should not be removed merely on account of its large size; only if there is a history of tonsillitis. Some of the smallest tonsils are the most vicious. A tonsillectomy should always be considered a hospital operation, particularly in adults. It is a mistake to view the operation lightly or to stimulate that impression in the laity. True, it is not often that complications arise, but when they do they can be exceedingly unpleasant.

Complications.—Severe hemorrhage does occur occasionally, though not as often as imagined by some. Pneumonia, often of streptococcic origin, is a rather remote complication, but does occur and may cause considerable apprehension on the part of all concerned. It seems rather remarkable to me that it does not occur oftener. Pulmonary infarct, cervical cellulitis, gangrene and septicemia are some of the other hardly pleasant complications that do occur at times.

Methods of Operation.—The methods in vogue a few years ago of guillotining and punching out the tonsil, did not very generally accomplish the desired result. Many cases suffered with subsequent attacks of tonsillitis and the purpose of the operation was defeated by the proliferation of the remnants of tonsil tissue.

It is pretty generally conceded by authorities that when it becomes necessary to remove a tonsil it should be removed completely within its capsule. When this is done there can be no return, but occasionally there is an extension of the lingual tonsil upward. These masses of tonsil tissue rarely give any trouble, as they are usually healthy tissue.

The poor results from the old method and ill-advised operations have done much to bring this operation into disrepute among the laity at various times. This is to be greatly deplored, as there are few operations that give better results in well selected cases and conserve the general health more than this operation.

There are many methods of operation, but I think they can be divided into three general classes with minor modifications as to the instruments and technique, adopted to meet the personal taste and physical requirements of the operator: Instrumental dissection and removal, blunt and sharp; instrumental and finger dissection; finger dissection.

Of these three methods the combined finger and instrumental operation seems the most logical.

The armentarium for this operation is reduced to a minimum and consists of a mouth gag, some form of tonsil knife, my preference being the Douglas, tongue depressor, tenaculum, snare, and a good, fairly long, index finger.

The technique is as follows: Using continuous anesthesia; when the patient is well under, insert the gag, depress the tongue well, so as to put the anterior pillar on the stretch, then with the tonsil knife make the incision at the margin of the anterior pillar, where it leaves the tonsil to insert itself in the tongue. Carry this incision up to the superior commissure. The index finger is then inserted in the incision and the tonsil peeled away from its attachments. When the tonsil is well separated you will often find it hanging by its pedicle free in the throat. It is then grasped with the tenaculum and the snare engaged, and the tonsil removed, taking care not to remove a part of the uvula as well. Gauze may be packed into the fossa for a minute or so to control the venous ooze, and usually on removing the gauze you will find a dry muscular bed. At that time it is well to swab out the fossa with 50 per cent. solution of iodine in glycerine.

The epipharynx is then examined and the adenoids removed if thought necessary.

I wish to mention here an instrument of merit for the removal of the adenoids, namely, the LaForce adenotome. With the Lowenberg and various other forceps, the Gottstein curette and others, the procedure does not seem refined. The tissue frequently is swallowed; sometimes it gets into the larynx, and occasionally strips of mucous membrane are torn from the posterior pharyngeal wall. With the LaForce adenotome, if the mass is a median one, it nearly always can be removed with one bite. The eustachian eminences are in no danger, and the mass is in the instrument, you may be sure of that. The blade cutting up and severing the mass at the end of the cut, obviates the possibility of stripping the mucous membrane.

The point in favor of the finger in the dissection of the tonsil is this: the capsule has a distinct feel, and one can tell immediately whether he is behind the capsule or in the tonsil tissue. With the instrumental dissection this is not always possible, for with the hemorrhage the sight is obscured largely, and it is not possible to distinguish the tissue by feeling with the instruments.

The so-called friable or rotten tonsils so often spoken of, I bebelieve a large percentage to be tonsils that are broken into or cut into by the operator at the start. When this occurs it is almost impossible to get back of the capsule, and one must resort to the punch to remove the mass, and more than likely enough of the tissue is left to give subsequent trouble, particularly if it is in the supratonsilar space.

Post-operative pain in these cases I believe can be minimized by reducing the sponging as much as possible so as not to injure the mucous membrane on the posterior wall of the pharynx and the uvula which gets very edomatous and causes considerable annoyance.

As to the hemorrhage, the easiest place to control it is on the

table while the patient is still under the anesthetic. The blood supply comes from many small vessels, branches of the facial and lingual; the tonsilar, ascending and descending palatine, ascending pharyngeal and dorsalis linguae. These vessels supply the tonsils, the tongue, the fauces and the uvula. There is free anastomosis between them. Occasionally one will see a sharp hemorrhage from one of these vessels, usually a branch of the tonsilar.

There are many methods of controlling these hemorrhages and many instruments have been devised for that purpose, but none are really satisfactory and most of them are complicated. The mouth is an exceedingly difficult place to work in, and it is very trying to have to ligate a bleeding vessel and often the ligature comes off when the patient begins to swallow or vomit. Probably the simplest and the most satisfactory way of controlling a bleeding point is to grasp the bleeding vessel or point of bleeding in a curved clamp, and with a suture of No. 2 cat-gut in a small, full-curved Kelly needle, whip a couple of sutures over and over the clamp, in the manner the gynecologist treats the stump of the broad ligament. These sutures will hold.

The after treatment consists of liquids and simple cleansing mouth washes, catharsis and swabbing of the fossa the day after operation with an iodine mixture. Swallowing is pretty painful for a few days in adults; children seldom complain after the first day. The white, membranous-looking lymph patches remain in the throat for about ten days or a week, when the throat is usually well. Patients should stay quietly in bed for at least three days.

In regard to this operation upon adults I can say with feeling that it is far from being a pleasurable event.

Anyone who has done many tonsillectomies on adults, must have noticed the extreme exhaustion, both mental and physical, which follows this operation. It is out of all proportion to the amount of trauma induced, and it is the writer's opinion that it is due to shock, both psychical and traumatic.

Since Crile's theories have been advanced and substantiated, I have been wondering why his "anoci association" operation could not be applied to these cases I speak of. I have done this on several cases with more than satisfactory results. If possible I send the patients into the hospital about two hours before I expect to operate. They receive a hypodermic injection of morphine about half an hour before they go to the operating room. The anesthetic is started with nitrous oxide and switched to ether when the patient is under. The pillars of the fauces are well infiltrated with a 1 per cent. solution of novocain and 1/400 adrenalin, then I proceed in the usual way with the remainder of the operation. When the tonsils are removed and the fossae are dry I inject a solution of quinine and urea hydrochloride in the strength of ¼ per cent.

As a rule there has been little or no pain for two or three days, and the general weakness which so often lasts for a week or ten days is materially reduced.

I have not had enough adult cases to arrive at a definite conclusion, but I am certainly satisfied that the patient's condition, post-operative, is much more comfortable under this procedure than it is without the use of these nerve-blocking solutions.

It would be much more satisfactory if we were able to use nitrous oxide exclusively, but unfortunately I am afraid that it would not be satisfactory, if possible, but I propose to try it at some subsequent time.

Dr. Chas. W. Richardson said that he had enjoyed the paper, a very excellent one, and on a subject that cannot be too frequently presented. He wished to speak of several points, but especially the references to German workers as pioneers in pointing out the relation between tonsillar disease and rheumatism; first honors for work in this field should be given to Bosworth and to Packham, of the University of Pennsylvania, who wrote on this subject as early as 1887 or 1888, as also on the relation of tonsillar disease to endocarditis. The paper had spoken also of the fact that acute tonsillitis may set up acute nephritis. Dr. Richardson had seen several such cases. Loeb, of St. Louis, five or six years ago reported cases of this kind, his own child having suffered with the complication. It is important for general practitioners to recognize this fact as also to recognize the wisdom of keeping tonsillitis patients abed, with the instruction that they suffer from an acute disease which exposes them to dangerous complications. Not long since he had had a case of a woman who had been bedridden for many months with acute articular rheumatism; he had hesitated to remove the tonsils but finally did so, with the result that the woman was cured of the rheumatism in two or three weeks, and has remained well since. That case had confirmed his inclination to remove the tonsils in any case of rheumatism. It is often astonishing to see how removal of the tonsils improves the general health. As to when they should and when they should not be removed, is a very difficult question to answer at times; but there need be no question about it when the tonsils are subject to repeated attacks of inflammation, or when they are an obstruction to deglutition, to respiration, or to voice.

The paper gave the method of removal which was being adopted by more and more men. He himself had long advocated the finger enucleation as the method of choice; whether the operation is done entirely by the finger or by a combination of finger and instrument is a matter of personal preference. The film of mucous membrane passing from the pillars to the tonsil is easily broken through by the finger, and after this step the enucleation is

quite easily and quickly done. In six years, during which he had used the finger enucleation exclusively, he has not had one serious hemorrhage. Any cutting may be followed by hemorrhage, and therefore cutting should be avoided when possible. By any method all hemorrhage should be controlled before the patient leaves the table. In his opinion postoperative pain is due more to rough sponging than to the operation; attention should be given to this feature. He did not claim any priority in advocating the method of finger dissection for tonsillectomy; the operation has been done since the time of Celsus.

Dr. O. Wilkinson said that probably no operation has been done with more different instruments nor by more different methods. No mention has been made of the Sluder method; 40 per cent. of the men in Chicago use this method, which is both pretty and quick. The finger enucleation method is an excellent one, but he could not see why anyone would prefer making the first entrance by breaking through the mucous membrane with the finger when a small, clean incision will so easily expose the tonsil. Finger dissection throughout did not seem to him as good surgery. As for hemorrhage, many men have for years been demonstrating that this accident is due not to the method of removing tonsils but to incomplete removal, thus not allowing for the retraction of the vessels. With regard to anesthetic, it did not seem to him justifiable to give a general anesthetic to adults for this operation. If a preliminary injection of morphine and atropine is given an hour before the operation, and local infiltration with 1 per cent. alypin solution is employed, the operation may be done without pain and without subjecting the patient to postanesthesia dangers.

The LaForce adenotome is an ideal general practitioner's instrument, but it is not good for the careful workman and cannot be used to clean out Rosenmuller's fossa or other recesses.

Dr. McKimmie said that while the subject of tonsillectomy had been discussed very extensively of late, the paper served a specially useful purpose in reviewing the pathology of tonsillar disease. The method of removing the tonsils as given in the paper, viz: incision and finger dissection, seemed to him to be ideal. Criticism of the finger dissection method must rest on scant observation of the work of men who are using the method extensively. Local anesthesia, in his opinion, should not be used; patients often do badly after it, and the operation cannot be done as cleanly as when a general anesthetic is used. Moreover, patients are exposed to psychic shock when local anesthesia is employed. Dr. Huntington had spoken of persistent enlargement of neck glands as an indication for tonsillectomy; this is true, but it must be borne in mind that enlargement of glands of the neck

may also be caused by adenoid masses without tonsillar involvement.

Dr. Huntington said that the complications of tonsillitis are not sufficiently emphasized; it is remarkable what a large proportion of heart lesions may be found among children subject to this disease. He had seen several thousand tonsil operations, and it seemed to him that the amount of trauma is not much influenced by the method used. He differed with Dr. Wilkinson in the statement that hemorrhage is caused by incomplete removal of the tonsil; Dr. Huntington had seen many cases of brisk hemorrhage after complete removal. The concensus of opinion is that tonsillectomy is a hospital operation and should not be done under local anesthesia.

SOME OBSERVATIONS ON SURGICAL MORTALITY FROM THE STANDPOINT OF THE ANESTHETIST.*

By H. W. Kearney, M. D.

Washington, D. C.

The position of anesthetist is somewhat peculiar in that it may be said to be more of a lookout point than that of other members of the surgical team. His duty consists not merely in a careful administration of the anesthetic, but in constantly taking soundings, so to speak, in order that the navigator of the surgical ship may be informed as to whether he proceeds in safety or approaches the shallows. Watching, weighing, analyzing, estimating, the man who sits at the head of the operating table must necessarily, if he thinks at all, receive some rather definite impressions concerning the factors influencing our surgical mortality. In attempting to deal with impressions received in this manner, this paper may not offer anything new, but the subject of surgical mortality touches us all very closely, and if it serves but to fix attention on some things we do not think about enough, or else forget, it will have been worth while.

Today a diseased process must, indeed, be firmly and hopelessly intrenched to escape surgical attack. In the light of past history, and having in mind the wide scope of present-day surgery, the results obtained appear little short of marvelous. Certainly with the average surgical risk, and by the exercise of average present-day surgical care and precautions, we at least escape casualties which in days not very long gone would almost surely have resulted in death. But of the cases which constitute the usual source of our surgical mortality, those requiring extra-

*Read before the Medical Society February 25, 1914.

ordinary care and precautions and judgment, do we save as many of these as we should? as we could? This is the field where the real triumphs of surgery are to be won, where the deepest gratification from success is to be obtained, and yet we not only often lose desperate cases, but many which *seemed* to have at least a fair expectation of recovery. What is the reason?

In thinking these things over I have become persuaded that it is not so much in our surgery proper, that is, in our actual operative work, that we most frequently fail. The trouble with us is that this particular part of the work is so attractive that it obsesses us to such a degree that in our enthusiasm for accomplishment in this part of the field we sometimes lose sight of important fundamental considerations on which success depends. For instance, with minds intent upon what from custom we have come to regard as *the* thing of importance, we may fail to appreciate that every step of our surgical procedure is depressant to vital resistance—that every individual can endure but so much and no more, that in the last analysis no patient will live if the factors making for safety which constitute the sum of his resisting power are outweighed by those opposing, and that our safety lies in conserving vital resistance. Therefore we lose many of the cases which die because of nonattention to some accessory detail which, though perhaps not ordinarily regarded as of vital import, has proved of sufficient weight to turn a somewhat delicate balance and determine the question of death or recovery. Some little thing such as a few lost minutes somewhere —a little too much undertaken—some neglected measure of protection against the effects of trauma, or shock, or hemorrhage, or exposure—an unwise selection of the anaesthetic—submission to faulty operating-room routine—has probably proved to be the last straw and worked our undoing.

To paraphrase the scripture text concerning the three Christian graces, I should say that from the anesthetist's point of observation the three Surgical graces are *Information, Preparation* and *Conservation,* and the greatest of these is conservation.

If asked to express in one sentence most of the reasons for the majority of our unexpected surgical deaths, I should say something like this: "We do not routinely use all the means at our command to *ascertain* the resisting power of the patient, and with this in mind, from the outset adopt and adhere to a policy of management best calculated to conserve this natural resistance, that it may be turned to account in effecting recovery."

If asked to be more specific I should say that our weakest points are these:

1. We do not sufficiently study individual vital resistance.
2. We make inadequate or obsolete provisions against the onset of shock.

3. Our selection of an anesthetic is often made without due regard to what its effects may lead.

4. We are guilty at times of excessive traumatism.

5. We lose valuable time in our operating rooms because of non-essentials and unpreparedness.

While the great majority of our surgical cases do recover in despite of these things, I would speak on the foregoing points a little more in detail.

Our first important duty is the study of the individual before operation with a view to determine not simply the nature and extent of the disease, but also as nearly as possible how far nature can be depended upon, with such assistance as can be given it, to take care of the consequences of surgical interference with her vital processes in the effort to cure disease. We don't always do this, but we should. There is, unfortunately, no definite criterion to guide us with certainty to a wise judgment. But while this is true we have the lessons of experience, tongues to interrogate, eyes to observe and catch warning signals, physiological and pathological knowledge, laboratories and instruments of precision (including the B. P. apparatus and the kidney functional test); and the consistent use of these information gatherers will many times bring out revelations of conditions entirely unsuspected by the patient, but which, if unknown to the surgeon, might lead to grave error. Hence we should omit no means of examination which promise any assistance in a comprehensive analysis of the case, to the end that we may decide definitely, if possible, what *needs* to be done, how it may be done with least injury to the patient, whether the patient can stand that injury, and then prepare for what is necessary so that there may be no indecision, hitch or delay.

It seems superfluous to mention these things, but in surgery we are handling human lives, and we are now speaking of the factors entering into surgical mortality, and in practice we sometimes operate upon persons whom we have never even seen before meeting them in the operating room. It would seem that, as a measure of prudence and general protection, and as the just due of all our cases, we should work out and closely adhere to a careful scheme of procedure, before, during and after the operation, for all cases alike, those presumably good and those obviously bad, modifying it only when circumstances demand. There is no denying that such a course taken routinely involves much work and takes much time, but if it even *occasionally* leads to a discovery that would modify management in a single important detail then it should be held justified and necessary. On the other hand, if we do *not* follow a routine we leave a disciplinary loophole through which error and failure and vain regret are sure to creep sooner or later.

Approaching the operation the question of our defences against shock presents itself. The several theories as to the production of shock we will not discuss as such, but will content ourselves with the statement that its onset may be said to depend upon predisposing factors such as depression, low vitality, over exertion, high nervous tension, etc., and upon producing factors such as traumatism and profound emotion. It is with the prevention of shock that we are most concerned since that is more important than treatment. It is better policy to strike the first blow than to fight desperately in a ditch.

The experimental researches of Crile have convincingly demonstrated the serious physiological effects of psychic shock and have shown beyond question what actual cell damage great dread may accomplish. The cell is the unit of the human organism. Upon its health the general resistance depends, and we know that actual trauma is not the only influence which will exhaust the functional activity of the cell or even destroy it entirely. Now to prevent the occurrence of psychic shock we must begin before its cause begins to operate, and certainly this is as far back as the first announcement to the patient that an operation is desirable. Those who are so phlegmatic and unafraid that this factor is negligible are very few. We are much more likely to meet with individuals who if they have reason to suspect that they need an operation will postpone what to them is an evil day and not consult a surgeon for weeks or months. Indeed, I doubt not that most of us, familiar as we are with the vicissitudes of surgery, would be staggered if we knew that we faced a major operation. And the reason is *fear of death.* There can be no other emotion so disturbing.

Here, then, our treatment of shock should begin. Failure to meet this condition and allay fear is to assume a handicap. With this in mind we want tact in examination, tact in explaining all that pertains to the operation, its necessity, what we expect to accomplish; the ability to reassure and inspire confidence. No effort should be spared to do this. It is worth while. Not a few dread the anesthetic more than anything else, and if *this* fear can be removed we have done a great deal. But do we attempt it as a rule, seriously? As likely as not we pooh-pooh the idea of such a fear as ridiculous, which may keep the patient quiet temporarily but doesn't convince him. The horror of complete unconsciousness and absolute helplessness while something is being done that may cost life itself is a very real one to many persons. I am afraid we sometimes err in not permitting the anesthetist to see the patient earlier than is our rule. He is given no opportunity to win confidence or establish a desirable understanding, and when he meets the frightened patient at the time of operation he is to that patient only a stranger, who feels no personal interest,

and who will say and do what he would say and do in any other case. I believe that if we gave due attention to the patient's mental condition we would in some cases save life, in many cases save much suffering, in most cases save money as represented by hospital days, and in all cases contribute much to our patient's comfort and satisfaction.

Selection of the Anesthetic.—In recent years much progress has been made by wide experimental work in scientific anesthesia, by the more general development of capable anesthetists, and the creation of greater interest among surgeons. Further progress will come as the result of more general enlightenment on the subject of anesthetic pathology. There *is* such a thing as anesthetic pathology. We are coming to have more respect for anesthesia than formerly, and especially do we feel this if we happen to have a notion that it may be necessary to submit ourselves to it. Nevertheless it is a fact that very many do not appear to *take in* the truth that instead of constituting a mere interim between two periods of consciousness, it is a serious physiological condition, involving cell changes carrying grave possibilities affecting the life and future health of the patient.

However, our present interest concerns the relationship of anesthesia to surgical mortality. Simpson, in this connection, recently expressed himself as follows: "Probably one-third of our deaths could be attributed to the disturbing effect of the anesthetic on metabolism, *i. e.,* to its effect on the liver and kidneys. The more we know of acetone bodies and the effect of metabolic disturbance, the more do I believe that the anesthetic and its effect on metabolism will probably be found to cause a high percentage of the deaths that occur."

The old-time conception of an anesthetic death is that of one occurring practically on the table, though we know that such an unfortunate occurrence is no more necessarily due to the anesthetic than whatever may come later is surely a consequence of the operation. Now a death occurring as the result of disturbed metabolism due to the anesthetic would only come as a more or less remote "after effect," and, following the old custom, would be attributable to anything we please *but* the anesthetic. If anesthesia is, by any possibility, responsible for anything like 33 per cent. of our deaths it becomes a vastly different proposition from the idea many of us have held regarding it, and from what our anesthetic statistics would lead us to believe. If the anesthetic substances we have been in the habit of using are capable of bringing about changes which kill one-third of the cases we lose, then it is high time we became alive to the fact and looked about for something less harmful and fatal. The general anesthetic most commonly used today is ether, and the question comes squarely before us: Is there any good reason to believe that ether can produce such seri-

ous effects as to be responsible for so many so-called surgical deaths?

What do we know about the effects of ether? That it is believed to produce anesthesia by a chemical solution of the lipoid substances of the brain. It also attacks the lecithin of the red blood cells, causing a temporary anemia, the lipoid of the leucocytes thereby reducing resistance to acute infection by disturbing phagocytosis, the specialized fats of the liver, kidneys and other organs, thus interfering with normal metabolism and elimination. The action of ether on these fats has been shown experimentally to be beyond question.

An evidence of serious disturbance of metabolism is the surprising frequency of post-etherization acetonuria. We seldom take precautions to guard against acute acetonemia, but what surgeon of large experience has not had to deal with symptoms of acid intoxication following operations? According to authorities acetone bodies are derived principally from fat and fat plus fatty acids. Their presence is probably an expression of abnormal fat destruction. The frequency of acetonuria following etherization, considered in connection with the theory of lipoid solution by ether, suggests more than a coincidence. The literature on the subject is extensive. Dr. Lewis Beesley, after two years' investigation chiefly at the Royal Hospital for Sick Children, Edinburgh, concluded among other things that "both ether and chloroform *invariably* produce a temporary acute acetonemia, which may be very detrimental even to an apparently healthy organism." It would be instructive to analyze the literature and show by figures its frequency and seriousness, but we are trying to cover too much ground in a short time. The whole trend of it tends to confirm the writer quoted. The presence of acetonuria means disturbance of metabolism, especially in the liver. The symptoms arising from acid intoxication are not unlike those which precede diabetic coma. The pathology is fatty degeneration of the liver, kidneys and muscles.

The relation between anesthesia and shock has not been definitely determined, but that certain anesthetics do increase the effect of shock by their depressing toxicity there can be but little doubt. One of Crile's experiments, comparing ether with N_2O+O in the effort to determine this factor, is interesting. Ten dogs were taken in each of two groups. The first ten were given ether by the drop method and shock produced by rubbing the peritoneum for three hours. The second group were given N_2O+O and shock produced in the same manner. Blood-pressure tracings were taken to determine the reaction. The ether dogs at the end of three hours showed an average pressure of ten mm. of Hg, whereas the N_2O dogs showed 110 mm. of Hg. The difference is certainly striking.

Now let us apply all this to our subject of surgical mortality, which we have conceded is almost entirely confined to our handicapped cases. If, in dealing with these persons, we use for anesthesia a substance which will cause anemia, lower resistance to infection, produce more or less grave metabolic disturbance, and in all probability add much to the effects of surgical shock, why then possibly Simpson may not be far wrong when he says that a third of our surgical deaths may be attributed to the anesthetic without injustice. Certainly a little study of the effects of anesthetics increases our respect for the possibilities of ether, cautions us to be careful of its selection and use especially in patients with a low grade of resistance, warns us against its early repetition in *any* case and suggests an explanation of post-etherization symptoms which have not been any too well understood.

The alternative to ether as a general anesthetic is N_2O+O. From the patient's standpoint it is as nearly a perfect anesthetic as we can well expect to obtain, and, except for one rather important and a few minor objections, the same may be said for the surgeon. Most of us know something about it. It is believed to act solely by interference with the use of oxygen by the brain cells. It apparently has no other effect, and its entire influence on the body lasts but a few minutes after its discontinuance. Logically, therefore, if it *can* be used it *should* be, because, briefly, as Barnes says, of its freedom from all those influences which go so far to determine mortality. Certainly it should be used when the odds are against recovery. Its only danger is a matter of technique of administration and can be controlled. On the other hand, the after effects of ether are beyond our power. As has been well said, there is no fool-proof anesthetic. The principal objection to its routine use lies in the fact that even when preceded by morphine, complete relaxation may not be possible, and sufficient relaxation is a requisite in abdominal work.

Crile and others have demonstrated the practicability of gas in abdominal work, and in a recent article by one of his assistants the mortality in his last thousand miscellaneous cases was given as .8 per cent., which is pretty low. But if we are going to use it in abdominal surgery without disappointment, except in selected cases of low vitality or with flabby abdomens, it will be necessary for the surgeon and the anesthetist to get together, develop a technique similar to Crile's, and, with a mutual understanding of the needs of the situation and the possibilities of the anesthetic, harmoniously coöperate with each other in the interest of the patient. By so doing most cases, whatever the operation, could be given the benefit of this excellent anesthetic. Teamwork is always important, though to the detriment of the patient we don't always have it. But it is especially important when the anesthetic is gas and oxygen. Many anesthetic difficulties, even when using

ether, are due to unexpected and unprepared-for manipulations, and are most apt to occur when the anesthetist is carefully nursing a case along with as little of the drug as possible. The trouble with us is we don't properly appreciate the advantages of gas to the patient. Ether is so much easier to use and we have the ether habit. Also we think to save him a few dollars for the increased cost of the gas, and let him endure the difference in pain and discomfort, take his chances as to other complications, and if he has to pay for more hospital days—why, we can't help that.

Considering the factor of traumatism.—We will speak of traumatic shock arising during the course of the operation as a thing distinct from the depression of vitality from such causes as a toxic anesthetic, or the loss of blood, or over exertion from mechanical interference with the action of the diaphragm, or embarrassed respiration, though certainly traumatism in combination with all these things tends to bring on the exhaustion which is a forerunner of collapse.

What operative procedures tend most to bring about traumatic shock? To begin with, a hacking, bruising, skin incision rather than a clean, quick cut with a sharp scalpel. Then follow a long list, such as crushing and dragging of nerves, handling or exposure of intestines, pulling on the mesentery, pressure on liver or spleen, traction on gallbladder or uterus, dragging on stomach, squeezing of ovaries or testicles, roughness with retractors, massage of parietal peritoneum with packing sponges—these things produce shock. No one can be more alive to the fact than the watchful anesthetist. It is he who notes the fall in blood pressure, the quickening pulse and the increased rapidity of respiration. The condition progresses as time passes. How is it to be prevented or reduced? Very largely by the "velvet hand" style of surgery and the development of a good technique in the use of a local anesthetic to block the sensory nerves in the field of operation. The entire surgical corps should have in mind what manipulations are most productive of traumatic shock and be governed accordingly. Bloodgood urges the more general use of the blood-pressure apparatus, as an indicator of shock, and doubtless it is much more reliable than the best educated finger on the pulse can possibly be. Besides all concerned would constantly be kept in closer touch with the state of affairs. But to the anesthetist watching anxiously the progress of a critical case the greatest surgery, other qualities being anything like equal, is that which is distinguished by the greatest gentleness of touch and manipulation, and I am far from feeling sure that there is any other quality of equal importance to the patient. The surgical signs of the times indicate that it will be a characteristic of the surgery of the future.

The question has often arisen as to whether pushing the anes-

thetic at such times helps matters. Keen, in his work on surgery, states that many hold that in a critical operation, when the patient is to be subjected to great shock, such as the things I have mentioned, the anesthetic should be pushed in order that the nervous system may be so obtunded that shock would not be felt. This never seemed logical to me, because we know that the action of ether is not such as to prevent the registration of impulses in the sensorium, certainly until we approach the lethal dose, although the patient may have been deprived of the power to signal resistance by its action on the cortex. So if we adopt this procedure we have only succeeded in adding to the shock the exhaustion produced by an overwhelming drugging. This is what we pay for absolute relaxation in the old way. Is it worth the price? Can we not secure it by less harmful means?

In conclusion, a few words on the relation existing between the patient's power of endurance and the factor of time—time selected for, and time consumed in operation. In such cases as acute appendicitis, intestinal obstruction or perforation, etc., the time relief is attempted with relation to onset, may decide the question of success. Here there is an opportune moment which, if allowed to pass unimproved, multiplies many times the chances against recovery. This moment may have been allowed to pass through no fault of ours—sometimes this happens through our own bad judgment. In other cases, where there is a question of lack of resistance, by doing a single severe operation in two stages, when practicable, or by declining to combine two operations in one, thus dividing the forces of the enemy, so to speak, we may display good generalship. As for time consumed in various ways during the operation, who is there among us who has not seen numbers of cases hold up well through a fairly long operation and go to pieces in the last few minutes? There are many ways in which these few vital minutes may have been thrown away which readily occur to us, just as there are ways of conserving strength which also occur to us, but which we must admit we do not always practice, and in consequence cases which are not strong may be lost and we scarcely appreciate the reason for it. Time is a factor which tells mightily when a case is approaching the limit of his resisting power. Our operating-room habits and customs and methods should be refined and revised with no lost motions and no lost minutes as the object to be obtained, for we face situations in the operating room when lost motions and lost minutes mean lost lives, as we all know well enough.

The individual who studies results in this class of patients largely from the viewpoint of the anesthetist, who keeps in touch with the very important work being done along the line of physiological and pathological effects of different anesthetics, who has observed closely and thoughtfully in all sorts of patients the

contest of the vital forces against the combination of disease, surgical trauma, and anesthetic drugs, who has watched the rally and retreat, and often noted with anxiety what seemed the final turning point down grade, may perhaps acquire a bias of judgment and come to interpret many surgical fatalities from the standpoint of the anesthetist alone, but certainly he cannot escape the conviction that we would approach much nearer to the attainment of all that is possible in our results if, while striving to perfect our operating technique, the necessity for more attention to the minor points, so-called, were also kept in mind.

Genius has been said to consist in an infinite capacity for little things. I believe it was Michel Angelo who said while working painstakingly on the big toe of his statue of Moses—"Trifles make up perfection, but perfection is no trifle."

Dr. E. P. Magruder said that the paper was both admirable and timely. No one who had seen Crile operate could question the efficacy of the method advocated by him. Many points in the paper were familiar, but they were none the less important. Nothing was more important, even for the busiest surgeon, than to give a few minutes to the patients to give them the assurance that all would be well. The question of psychic shock must be reckoned with; the case reported by Dr. Willson demonstrated this fact. Dr. Magruder had seen several such cases; the patient had, in effect, died before the incision was made. The paper surely afforded food for thought to all who had to do with anesthesia.

Dr. Lowe had listened with interest to the paper. Two years ago he had read a paper on the same subject, and he had brought up the subject of the prevalent carelessness with respect to the urine examination before anesthesia and operation; too often only one urinalysis is made before operations. He recalled one case in which the anesthetic was about to be started when the belated urinalysis report was brought in with the information that the urine was loaded with sugar. In cases of chronic nephritis, many specimens of urine may be passed containing no albumen; many examinations should be made to exclude this condition. He had had four deaths from acidosis after chloroform anesthesia and one after ether; these might have been avoided by proper scrutiny of the urine beforehand. Preoperative catharsis may do much harm; he had seen unmistakable shock follow drastic catharsis. Not enough attention was given to insuring sufficient restful sleep for patients on the eve of operations; such patients should, if necessary, be put to sleep with hypnotics. The admission of visitors should be regulated by the surgeon, and the choice of visitors should be governed by the principles of anoci association. As to conservation of time, the practice in all hospitals is very bad in

this respect; too much time is wasted. Resident assistants become efficient only to be replaced by the inefficient; they should stay longer and be given more opportunities. The temperature of operating rooms was not given enough attention. Much post-operative pneumonia was due to hospital carelessness; there was too much exposure between the table and the bed.

Dr. Chipman said that the paper and Dr. Lowe's remarks in discussion of it left little to be said. Dr. Chipman would emphasize the importance of seeing patients before the time for anesthesia in order to gain their confidence, and he endorsed strongly the advice that sound sleep should be ensured on the night before an operation. With respect to the absence of complete relaxation under nitrous oxid anesthesia, it should be remarked that while relaxation may be secured by deep ether anesthesia, such anesthesia no more prevents shock than does light ether anesthesia, but it does harm in other ways.

Dr. Hagner had enjoyed the paper and the discussion. He thought that all surgeons must be conscious of a sense of guilt as regards the neglect of many important details for safeguarding the patient enumerated in the paper. The anesthetist is surely to judge as to the relative importance of these matters. He had recently had the sad experience of losing a patient from the effects of anesthesia; he had operated for varicocele, the operation being simple and soon over; but the patient had insisted on having a deflected septum attended to during the same anesthesia, which, on this account, was of an hour's duration. Pneumonia followed the operation and the patient died, his leucocyte count during the pneumonia never going over 970.

ARTERIO-VENOUS ANASTOMOSIS FOR THREATENED GANGRENE; WITH REPORT OF A CASE.*

By H. H. Kerr, M. D., C. M.,

Washington, D. C.

Arterio-venous anastomosis, or reversal of the circulation, in a limb in the human being was first done by San. Martin y Satrustegui in 1902. Carrel, of the Rockefeller Institute for Medical Research, had demonstrated the technique in the dog. By his original method the artery and vein were divided at the same level and an end-to-end anastomosis of the proximal end of the artery made to the distal end of the vein. Since then several methods of lateral anastomosis have been developed, notably that of Bernheim and Stone in 1910.

*Read before the Medical Society March 25, 1914.

Lateral anastomosis is theoretically more correct and gives better clinical results than end-to-end suture. Bernheim in February, 1912, collected all the reported cases, 52 in number, done by either end-to-end or lateral suture and only 30 per cent. were considered successes. However, as they included the earlier cases and those done before a proper technique had been developed, it will probably be found that better success has attended the later attempts. Bernstein himself has performed the operation nine times with six successes. One of his cases was that of a young woman in whom he reversed the circulation in all four limbs for real or threatened gangrene in a severe case of Raynaud's disease.

The development of the proper principles of technique, convenient instruments and careful indications for selecting cases for this procedure should give a much higher percentage of success than in 1912. The mortality from the operation itself should be as small as for any other operative procedure of like magnitude. In case of absolute failure to stop the progress of the gangrene nothing has been lost by the attempt, as amputation would have been the only alternative.

The lateral anastomosis has the advantage over the end-to-end method in that the arterial channel that is not already occluded is still open and functionating in the former. The limb has therefore two possible sources of arterial blood supply, the non-occluded portion of the artery and the vein. In the end-to-end suture the original arterial supply, or what is left of it, is sacrificed, and in the event of thrombosis at the line of union, amputation is the only alternative.

Some experimenters have denied the truth of the statement that the valves of the veins give way and allow the arterial blood to flow down them in the opposite direction to the normal. The demonstration of a palpable and visible pulsation in the veins distal to the anastomosis in cases successfully operated on and in cases of accidental arterio-venous aneurysms, is definite proof to the contrary. Two such cases have come under my observation; one in my service at Freedmen's Hospital and another in the service of Dr. James Mitchell at Providence Hospital. In both the demonstration of the reversal of the circulation was absolute.

As to the technique there are a number of departures from the usual operative procedure that are of paramount importance. Here the principle of clean, sharp-knife dissection is more necessary than elsewhere, and wide and careful exposure is a *sine qua non* of success. The operative field should never be allowed to become dry; occasional flushings with normal salt solution must be done all through the operation. When the vessels have been opened, in addition to the flushing of their lumina with salt solu-

tion, Bernheim recommends the squirting of liquid vaseline over their intima as an additional protection against drying and injury. Should this delicate membrane, the intima, become destroyed, a thrombus will develop at the point of injury and possibly defeat the object of the operation or even lead to occlusion of the blood vessels to the limb altogether. The instruments that come in to direct contact with the vessels must be dipped in the liquid vaseline and the needles and silk used for the anastomosis must be sterilized in the same medium.

The case I wish to report was one of threatened gangrene from diabetes. Although I find no report in the literature of this operation being used for diabetic gangrene, Bernheim says in his book on "Surgery of the Vascular System:" "I see no reason why this operation should not be done in this condition in suitable cases."

Further indications for the operation will undoubtedly develop. It is probable that it will be found useful in severe cases of intermittent claudication of arterial origin.

H. B., aged 62, was admitted to the Freedmen's Hospital suffering from diabetic gangrene of the right foot and threatened gangrene of the left foot. Her family and personal histories were unimportant. Her present illness dated back about six weeks, when she first experienced numbness and tingling in the right foot. This was followed within a fortnight by pallor and coldness of the extremity and the appearance of a spreading cyanosis of the great toe and the external side of the foot. About the same time she first noted signs in the left foot similar to those that had preceded the cyanosis of the right. The condition of the right extremity progressed to frank and spreading gangrene in spite of treatment, and she was sent to the hospital for amputation. At the time of her admission there had appeared on the left foot an area of cyanosis about the size of a quarter, on the ball of the great toe, and a similar discoloration of the tip of the little toe.

On physical examination she proved to be a woman well over 200 pounds in weight, whose arteries were not apparently sclerosed. She was in a state of semi-coma, but when roused and questioned complained of great pain in both lower extremities. Sugar, albumen and casts were found in her urine. Her pulse was 110 and her temperature 99.6. It was evident that the gangrene of the right leg was spreading rapidly and that the same condition was about to develop in the left. Salt solution with bicarbonate of soda, 20 grains to the pint, was given continuously by the rectum and she was prepared for operation the next day. Her mental condition improved markedly under the alkaline proctolysis and all signs of coma had disappeared when she was taken to the operating room. Under novocaine anesthesia a long, oblique incision was made in the left thigh over Scarpa's

triangle. On account of the scar of an old burn in this region and the thick layer of underlying fat the incision had to be made at least a foot long to give adequate exposure. After carefully dissecting out the femoral vessels, they were both occluded at the upper and lower extremities of the wound. Broad bands of tape caught with artery forceps were used for the artery and bulldog clamps for the veins.

The artery and vein were then divided transversely across about one-third of their circumference with a sharp-pointed bistoury. These incisions were made so that the resulting gaping wounds looked outwards and towards each other. When all hemorrhage had been controlled and the lumina had been washed clean of blood, the two circumferences of the wounds in the artery and vein were sutured together. The continuous suture of fine silk was begun at the lower end and the posterior edges united first. In placing this minute suture I found great difficulty. Several times the delicate thread gave way, and one suture had to be discarded because the needle broke. However, finally the union was completed around the entire circumferences of the wounds. The proximal portion of the vein above the anastomosis was then permanently ligated and the other occluding tapes were loosened. A leak became evident, and several sutures had to be placed before it was controlled.

When this was accomplished the current of blood could be seen coursing down both the artery and vein. The incision was carefully closed with catgut and silk. The patient was then given a few whiffs of chloroform and the right leg was rapidly amputated a hand's breadth below the knee. She was put to bed with the left leg wrapped in a thick swathe of absorbent cotton, and surrounded by hot water bottles. The alkaline proctolysis was immediately started again. As soon as possible water by mouth, starch-free nourishment and codeine, were administered. Her general condition improved in the next ten days, although infection appeared in both the wound of the groin and the stump. This, however, appeared to have no effect on her general condition and the left leg continued in a healthy condition. There was no extension of the cyanotic areas on the foot and she stated that the sensation of tingling and numbness had disappeared.

The sugar never became absent from the urine and she began about fifteen days after operation to show signs of recurrence of coma. At first this seemed to respond to large doses of soda by mouth and rectum, but finally she became unconscious and died about one month after operation. Her death was characteristic of diabetic coma, and it is with extreme regret that I report that an autopsy was not allowed. Although I felt that the condition was desperate and hardly hoped to save the patient, when it became evident that the threatened gangrene of the left leg had

been arrested by reversal of the circulation, I am the more disappointed that I did not get the opportunity to demonstrate the specimen before you.

Dr. Lowe asked Dr. Neuman to tell about two cases in which this operation was done at the Georgetown University Hospital.

Dr. Neuman said that both operations had been done by Dr. Vaughan. In one case a side-to-side anastomosis was done in an old negro to relieve a threatened gangrene from endarteritis. The foot was saved. The other case was one of diabetic gangrene; coma soon supervened and the patient died.

In Memoriam.

DR. GEORGE LLOYD MAGRUDER.

At the meeting of the Medical Society March 4, 1914, the memorial committee on the death of Dr. George Lloyd Magruder, made report.

Dr. D. S. Lamb from the committee read the following biographical sketch:

Dr. George Lloyd Magruder died of diease of the heart January 28, 1914, at the Georgetown University Hospital, Washington, D. C. He was born in Washington, November 1, 1848; the son of Thomas Contee and Elizabeth Olivia Morgan Magruder. His earliest American ancestor on the paternal side was the immigrant Alexander McGregor, who came from Scotland about 1650, settled in Maryland, and changed his name to Magruder soon after his arrival. Dr. Magruder's father was paymaster on the Washington Aqueduct and Capitol Extension, and Disbursing Officer under Quartermaster General M. C. Meigs.

Dr. Magruder was educated in private and public schools and by private tutors. He received the degree of A. B. in 1868, and A. M. in 1871, from Gonzaga College, Washington; graduated in medicine in 1870 at Georgetown Medical School; afterwards until his death, he practiced medicine in this city.

He was Professor of Chemistry at Gonzaga College 1871 to 1873; was for some time Prosector of Minor Surgery at the Georgetown Medical School; afterwards from 1883 to 1896 Professor of Materia Medica, and also Dean and Treasurer of the Medical Faculty. Later he was made Emeritus Professor of Materia Medica and Therapeutics.

He was Physician to the Poor 1871–2; Physician to Police and

Fire Departments 1883–7; was Consulting Physician to Providence and Emergency Hospitals, and member of the Board of Visitors of the Government Hospital for the Insane.

He was a member of the Medical Association and Medical Society of the District; of the American Medical Association; of the Washington Obstetrical and Gynecological Society; of the American Public Health Association, and of the Washington Academy of Sciences.

He joined the Medical Society October 1, 1873; was therefore a member over forty years; was Corresponding Secretary 1876–7; member of the Board of Examiners 1881–3; Vice President 1895; member of Committee on Legislation 1895–1901; of Executive Committee 1902–3; was a member of an important committee appointed April 5, 1893, to consider the question of an "Ice Trust;" the report of the committee was printed and sent to various officials and the local press. He was one of five delegates appointed by the Society Nov. 8, 1898, to the Food Congress; was a member of a committee appointed May 20, 1903, to coöperate with committees of other bodies in formulating a new law for pharmacy and poisons.

Dr. Magruder and Dr. H. H. Barker were the principal persons who founded the Central Dispensary, which was opened to patients May 1, 1871; about 1880 an emergency department was added, and the name became Central Dispensary and Emergency Hospital. He was also one of the founders of the Georgetown University Hospital.

He was very active and energetic in regard to two matters especially—the water supply and the milk supply of this District. In 1894 he began the campaign for a pure water supply; was Chairman of the committee appointed by the Society February 7, to investigate typhoid fever in this District. The committee reported June 6; the report was brought to the attention of the District Commissioners, at whose suggestion a committee was appointed by the Society, Dr. Magruder a member, to meet the District Committee of the House of Representatives to consider the matter. The latter committee had the report published as a public document. He was active in obtaining a hearing for the Medical Society in 1901 before the committee of the House of Representatives in regard to the filtration plant, and was a member of the committee appointed by the Society to favor slow sand filtration as against mechanical filtration; the former was eventually adopted.

With a like energy and persistence he agitated the matter of a pure milk supply for the District; and this meant, of course, a pure water supply at the dairy farms. In the report of June 6, 1894, this subject was considered and, through a suggestion of his to the District Commissioners, the Society was requested to

consider the draft of a bill to regulate the milk supply. He secured an investigation by the Department of Agriculture in 1906–7 into the water supplies of dairy farms that furnished milk to the District, and in 1907 also secured the appointment of a Milk Commission for the District. Also an investigation into the milk industry in the District itself, and the publication of Bulletin 41 by the Hygienic Laboratory on "Milk and its relation to Public Health," under the authority of the Bureau of Public Health and the Department of Agriculture.

In view of his activities the Executive Committee of the Society March 20, 1907, recommended to the Society that a vote of thanks be given to him for his excellent work in seeking the source of contamination of the water of the milk supply of the District. The recommendation was adopted. Largely through his efforts a symposium on the causes of typhoid fever in the District was had before the Society, in which many officials of the District, the Bureau of Health, and the Department of Agriculture took part.

The last paper that he read before the Society was on the "Problem of the milk product in the District," Nov. 24, 1909. However, he afterwards took part in discussions from time to time.

Dr. Magruder was married Nov. 22, 1882, to Miss Belle Burns, daughter of General W. W. Burns, U. S. Army, and Priscilla R. Atkinson Burns. Dr. Magruder left a wife, a son, Lieut. Lloyd Burns Magruder of the Coast Artillery, U. S. Army, and a daughter, Miss Pauline Magruder.

Among his published writings are the following reprints:

Some practical observations made at the Department of Diseases of Children at the Central Dispensary, Washington, D. C. 1880.

Pertussis treated by the Chloride of gold and sodium. 1885.

Operations for phimosis as a means of cure or relief of some nervous and other symptoms. 1887.

G. L. Magruder and C. W. Stiles: An extreme case of leucoderma in a negro, with a comparison of similar conditions in various animals. 1894.

The milk supply of Washington. 1907.

The problem of milk production in the District of Columbia. 1910.

Further observations on the milk supply of Washington. No date.

Also the following publications in which he took prominent part:

Report on typhoid fever in the District of Columbia. 1894. Published by U. S. Government.

Milk as a carrier of contagious disease and the desirability of pasteurization. Department of Agriculture. 1910.

The dissemination of disease by dairy products and means of prevention. Department of Agriculture. 1910.

He also published on his own account the following: The solution of the milk problem; 32 pages. 1913.

Dr. Frank Baker said that it had been his privilege to know Dr. Magruder through the greater part of his career; their contact had been more particularly in connection with the faculty work at the Georgetown Medical School. In the late 70's he had been associated with Dr. Magruder in Providence Hospital and there had observed his diligence, energy and proficiency especially in the surgical wards. Dr. Magruder was born in what was known as the Sprague house in Brookland, now long since demolished. He sprang from a family noted for the production of physicians. The late Dr. James E. Morgan was his uncle and was largely concerned with his medical education. Dr. Jas. Dudley Morgan, the son of James E., still represents the stock. Dr. E. L. Morgan also is of this family, and others might be mentioned. Dr. Gatton was probably right when he said that genius of certain kinds often runs in families; Dr. Magruder exemplifies the saying.

We all know Dr. Magruder's career as a practitioner. He was very early associated with the Medical Department of Georgetown University and at his death he was the oldest teacher in that institution. He was permanently attached to the chair of materia medica in 1892. This was a subject that he especially liked, and he was led to make a special study of the matter, a study which held his interest all his teaching life. We remember his paper on the use of chloride of gold and sodium in the treatment of whooping cough; he was also very enthusiastic about the use of some of the copper salts in the treatment of summer diarrheas. Dr. Magruder was much interested in the uplift of the medical school of Georgetown University; when he first became identified with it, the school was at Tenth and E streets, above some stores. It used to be a joke in the community that the two medical schools of Washington were one next to a stable and the other over a candy shop. Dr. Magruder worked assiduously to gain the interest of the University authorities in properly housing the medical school, and when the decision to build was reached, he acted as chairman of the building committee and worked with much energy early and late. To him also belongs much of the credit for the founding of the Georgetown Hospital and through him the first large subscriptions to this institution were obtained.

Dr. Magruder could always be found among the number of any community of citizens engaged in some cause looking to the betterment of the city; wherever a group of persons was gath-

ered to consider the uplift of the city he would always be among them, or, if not, he would come in a little later. He was almost obsessed in his late years with the idea of purifying the milk supply of the city; it was his overweening desire to finish his life work with the consummation of this object. It could be wished that his last days could have been made more peaceful by the realization of his ambitions in this matter.

Dr. Barton said: Tonight as we pay an affectionate tribute to the memory of another member of our Nestorian guard, which is becoming, alas, too ruthlessly depleted by death, we stop for a moment to consider the character of the colleague who has departed from us, and to examine the forces which made it so unique and picturesque, if not absolutely distinguished and commanding.

Only those of us whose medical memories extend back a quarter of a century can have an adequate conception of the intellectual, moral and social virtues which contributed to the rise to power of G. Lloyd Magruder.

About that length of time has elapsed since I first entered the sacred precincts of the medical school in which at that time Dr. Magruder was a predominant force. He was then forty-two years old and had been for seven years Professor of Materia Medica and Therapeutics, a position which he held, with the exception of a period during which he acted as Dean, for over twenty years.

Shakespeare has said "The evil that men do lives after them; the good is often interred with their bones." If this is so, it is likewise true that the misfortunes of men are more easily remembered than their triumphs. Napoleon is more closely associated with Waterloo than with Austerlitz, and now that Dr. Magruder is dead there will be a tendency for us to recollect him as he appeared in the last years of his life, partly shattered by the infirmities of illness and the shock of losses, against both of which he bravely struggled. But those of us who knew him in the olden days will choose the other recollection. We will associate him with the more glorious events of twenty years ago when he was at the zenith of his power and success; when the school he loved so well needed the enthusiastic service which he rendered her, and the hospital, then an infant institution, required the sympathetic nurturing and care which he unstintingly gave.

We will forget the gradually thinning form, the greater stoop, the deeper furrows in the face once handsome and bold and think of the Magruder who was Dean and Professor when many of us were just beginning; the man who, no matter how much we playfully mimicked and abused him, represented to us the power and glory of Alma Mater.

It is sad to realize that life's vicissitudes can work the transformations in us which it does and that

"The boast of heraldry, the pomp of power,
And all that beauty, all that wealth e'er gave
Await alike the inevitable hour,
The paths of glory lead but to the grave."

That no matter how high the eminence to which by fortuitous circumstances we may climb in this world, the fall must always be to the same level of senescence and of death. One philosopher will tell us that all potential energies in nature tend to be reduced to zero, while the more pious will believe that it is the hand of God. But however we may view the mystery of life in the abstract—a secret we may never know—life in the concrete in the individual appeals to us by virtue of its activity, of its enthusiasm, of its honesty and of its purpose. When, therefore, we see an enthusiastic worker we must perforce admire him, though in particular things we may happen to oppose him. It is the energizing stimulus we gain from association with active men that helps us as much as the knowledge they impart. If the transformations of cellular life depend upon the activity of a host of ferments, so the intellectual lives of men depend upon the stimulus of their fellows. Judged in this light Magruder was a mighty man. His was a great will, an indomitable energy, an almost wild enthusiasm. What if he did make critics, jeerists, nay, even enemies? Like Polonius to Laertes, he believed: "Beware of a combat; but being in't, beware that thine opponent may beware of thee."

He was above chicanery, however, and despised a subterfuge. He fought always in the open and absolutely without rancor.

I had the honor of becoming his associate in the school in 1900, and finally, in 1906, enjoyed the distinction of succeeding him in the chair he had so long and so honorably occupied, when he was made Emeritus Professor. I am happy to reflect that our association was always most friendly and remained so till his death.

Although Dr. Magruder taught therapeutics and pharmacy for nearly a quarter of a century, he belonged to a school of teachers now fast passing away. With the newer aspects of scientific pharmacology and experimental medicine he had but little connection, less sympathy and practically no knowledge. But this did not prevent him from being truly great.

An Italian proverb has it that "No physician ever takes physic," and one satirist has gone so far as to say that if all the drugs were dumped into the sea it would be all the better for mankind though all the worse for the fishes. All of us know that some very distinguished physicians have been absolutely nihilistic towards drugs, and skeptics at the present day may be counted by the score. With this attitude Dr. Magruder had no sympathy and less patience. He believed implicitly in drugs.

He out-Heroded Herod in this. Bartholow and Ringer were feeble in their faith compared to him. This unbounded confidence in the therapeutic powers of drugs was not founded upon any basis of scientific ratiocination but rather upon tradition and empiricism.

No one will accuse me of mentioning these facts to traduce him, for faith is sublime, and bereft of it entirely, this world of ours would become a seething mass of iniquity and contradiction. I mention it chiefly because it affords an insight into his character and explains many of his activities.

The faith he had in drugs he carried into all his other works. He had no less faith in any doctrine he ever promulgated, including his advocacy of milk pasteurization, which was the crowning *motif* of his life and absorbed all the energies of his latest years. It amounted almost to an obsession with him, and if this or a future generation should prove him right in this, the culminating conception of his life, then nothing but a monument could do justice to his memory.

Dr. G. Wythe Cook said that when he had first come to Washington, thirty-five years ago, he had the good fortune and pleasure to meet Dr. Magruder and had been invited by him, though a new comer to the community, to share his duties at the Central Dispensary; on this account he had always held Dr. Magruder in grateful regard throughout many years of association. He felt that he could add nothing to the recounting of the history of Dr. Magruder's life nor to the delineation of his character, both of which offices had been well discharged by those who had already spoken, but he wished to give expression to the sentiment of regard which the memory of Dr. Magruder evoked.

Dr. A. F. A. King said: We older men of the Society who can look back over the space of half a century or more can recall the faces and voices of many members who have dropped away from the sight of men. 'Tis a sad procession of faces; we recall their voices, their costumes, their manners and habits of thought. It is sad enough when we older men pass out, but when men of the age of Dr. Magruder, in the zenith of their mental strength and usefulness, are laid silent forever, a regret more than sadness is born. It is said "There are tongues in trees, books in the running brooks, sermons in stones, and good in everything." What good can we find in the death of a comrade? If any good it would be in the stimulus it should impart to this Society to work for the progress of medical science; when men before they have attained old age are felled by death, it is an indictment against our adequacy in the control of disease, and thus we should be spurred forward to new endeavors.

Dr. A. B. Hooe said that it was characteristic of Dr. Magruder always to consider the welfare of physicians in general; he desired

always to shield and protect physicians when they were threatened or assailed in the discharge of their duties. Just seventeen years ago Dr. Hooe, a young and inexperienced doctor, was on the witness stand in an important case; he had suffered much from the hostile examination and cross-examination of counsel in the case, and had left the court shaken and fearful of the ordeal on the following day. During the evening Dr. Magruder, whom he had never seen and who had never seen him, called him to the telephone and said: "Young man, I have read in the papers your testimony in the case now pending in the courts, and I want to congratulate you upon your bearing on the witness stand and upon the technical position you have taken; you are absolutely right in your position, and I hope when you go back upon the stand you will stick to the evidence already given." This was the friendly counsel and support of a man, secure in his professional position and public recognition, freely extended to a young physician, a total stranger, in a time of difficulty and stress. Dr. Hooe had always appreciated this chivalrous act and always should.

The following resolutions were unanimously adopted:

WHEREAS, Dr. G. Lloyd Magruder, an active member of this Society for over forty years, died January 28, 1914;

Resolved, That the Society recognizes in his death the loss of a fellow member who faithfully discharged his membership duties, and also gave unusual attention to and expended a rare and persistent energy in the advancement of the sanitary interests of this District, especially in the effort to secure a pure water and pure milk supply.

Resolved, That a copy of these resolutions be transmitted to his family, to which we herewith express our sympathy and condolence.

PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Wednesday, February 18, 1914.—The Vice President, Dr. E. Y. Davidson, presided; about 65 persons present.

The resignation from active membership of Dr. F. A. Schneider, was accepted.

Dr. P. B. Johnson called attention to alleged erroneous and misleading articles and editorials in the *Washington Post,* on the subject of "vivisection," and on his motion the matter was referred to the Committee on Public Instruction for consideration.

Dr. D. S. Lamb showed the following specimens:

1st. A monstrosity, known as craniopagus.

This specimen was a *monstrous twin duck.* The two individuals

were joined together by their frontal bones. The monstrosity is called a Craniopagus, and, according to the place of junction, a Craniopagus frontalis. In other cases the junction may be by the parietal or occipital bones, in which case they are known as Craniopagus parietalis or occipitalis. The brain is rarely involved. This monstrosity is very rare and seldom lives long after birth. In the case of the lower animals their fellows usually destroy the monstrosity. About 25 cases in the human subject have been reported. It is readily apprehended how inconvenient to the individuals such an attachment must be, in the matter of progression, taking food, etc. There is no apparent reason, however, why the individuals should die from this form of monstrosity.

2d. Stomach showing polyposis. See page 180.

Dr. T. A. Groover reported two cases of subastragaloid dislocation, with x-ray plates. Discussed by Dr. Shands.

Dr. Bowen reported a case of pregnancy in the 38th week, complicated with chronic endocarditis and nephritis. Discussed by Drs. Moran, J. D. Thomas, Chipman, Roy, Jack, Snyder and Bowen. Dr. Selby showed radiographs of the case. [This case, the conclusion of which was reported at the meeting April 1, will be published in the July ANNALS.]

Drs. Prentiss Willson and Selby reported a case of pregnancy with breech presentation, complicated by fibroids; confirmed by the x-ray plate, made and shown by Dr. Selby. Discussed by Drs. Groover, Bowen, Pfender, Moran and Selby. See page 182.

Dr. W. H. Huntington read the paper of the evening: "Tonsillectomy, its indications and technic." Discussed by Drs. Richardson, O. Wilkinson, McKimmie and Huntington. See page 184.

Wednesday, February 25.—Dr. R. T. Holden, Vice President, presided; about 60 persons present.

The death of Dr. H. M. Harvey was announced.

The Corresponding Secretary reported that he had received a letter from Dr. F. H. Garrison, in regard to an approaching visit of Dr. Monod, of Paris, to Washington, and asking the courtesies of the Society to him. Referred to the Program Committee.

On motion of Dr. F. R. Hagner, the Secretary was instructed to send to Dr. Wellington, the President of the Society, a telegram conveying the congratulations of the Society on his improved health, its sympathy with him in his illness, and its regret for his long absence from the chair.

Dr. Willson reported a rare obstetric case. Discussed by Drs. Lemon, W. P. Carr, Moran, I. S. Stone and Willson.

Dr. I. S. Stone presented a specimen of hysterectomy for fibroma of the uterus, with the following report:

The patient, a colored woman, aged 37, had been in good health and had not been aware of the presence of a tumor until it

reached quite a large size and had considerably distended the abdomen. The symptoms of degeneration, including pain, had been experienced of late and her physician found the cause in the tumor exhibited. There were no special complications found nor difficulties experienced in the removal of the growth and the patient bore the operation very well indeed. The present technique appeared to be very satisfactory in that the operative results were now approaching the low mortality of ovariotomy, a result long despaired of by surgeons. The morbidity, however, had not been so satisfactory until a very late period, and he was glad to report his results with the "iodine technique" as much improved, and the temperature curve very nearly approaching the normal.

Dr. H. W. Kearney read the paper of the evening; "Some observations on Surgical Mortality from the Anesthetist's standpoint." Discussed by Drs. Magruder, Lowe, Chipman, Hagner and Kearney. See page 192.

Wednesday, March 4.—Dr. Holden, Vice President, presided; about 95 persons present.

The Treasurer reported for February, receipts, $98.00; disbursements, $265.98.

An appropriation was granted to the Corresponding Secretary, $3.50 for stationery, and $34.30 for program cards, &c.

The Corresponding Secretary stated that he had a request from the secretary of the National Association for the Study and Education of Exceptional Children, that Dr. Maximilian P. E. Groszman, have an opportunity to address the Society. Referred to Committee on Program, for action.

Applications for membership were received from the following persons:

Active membership: Everett Monroe Ellison, G. W. University, 1912; Frank A. Hornaday, the same, 1910; Arthur Bickle Little, Georgetown, 1912; Benjamin Newhouse, University of Maryland, 1912; Albert Elwood Pagan, G. W. University, 1912; and Fred. Repetti, the same, 1906.

Associate membership: Deane Childs Howard, Major, M. C., U. S. A.; and Leland Ossian Howard, Chief of Bureau of Entomology, Dept. Agriculture.

The Recording Secretary reported that, as directed, he had sent to the editor of the *Journal A. M. A.* the paper of Dr. T. A. Williams, that was read before the Society Jan. 28, 1914. The paper was returned with a letter from the editor stating that he was unable to publish it. The editor's letter was read.

The Society next held a memorial session to Dr. G. L. Magruder. The widow, Mrs. Belle Burns Magruder, was present. See page 206.

On motion of Dr. J. D. Thomas, the letter of the editor of the *Journal A. M. A.* was referred to the Executive Committee, with instructions to prepare a suitable reply thereto and report at the next meeting.

The following new members were elected:

To active membership: Rolla Camden, Jefferson Medical College, 1897; George vonP. Davis, G. W. Univ., 1910; Alice Winans Downey, the same, 1911; Bernard Glueck, Georgetown, 1909; Elam Dolphus Haysmer, Vanderbilt, 1912; Henry W. Jaeger, G. W. Univ., 1911; Joseph Douglas McCue, Coll. Phys. and Surg., Boston, 1910; Murray A. Russell, Georgetown, 1908; and Margaret Ross Stewart, Med. Coll. Pacific, 1900; Woman's Coll., Philadelphia, 1906.

To associate membership: Walter A. Bloedorn, P. A. Surgeon, U. S. N.; Francis Smith Nash, Medical Director, U. S. N.; Wm. A. White, Govt. Hosp. Insane; Eugene R. Whitmore, Major M. C., U. S. A.; Wm. A. Wickline, Captain, M. C., U. S. A.; and Effie Alberta Read, Dept. Agriculture.

The name of Michael J. Ready was, at his request, withdrawn.

Dr. Nichols, for the Executive Committee, recommended that the Society give a smoker to the Virginia State Medical Society at the meeting of the latter in Washington in October, 1914, and that the question be made a special order for March 25. Adopted.

A letter from Dr. J. R. Wellington, President of the Society, was read, expressing appreciation of the resolution sent to him by the Society.

Dr. Mackall offered an amendment to the Constitution, Article V, section 4, as follows: To add "That all applicants who are not elected at the next stated meeting following the stated meeting at which their names are presented, shall be debarred from making any further application for membership in this Society for two years."

Dr. Sprigg called attention to the frequent instances in which physicians hurrying to respond to professional calls, are stopped and delayed by traffic policemen, and moved the appointment of a committee to inquire into the possibility of securing from the municipal authorities proper exemptions from the traffic regutions for physicians. So ordered.

Wednesday, March 11.—Vice President Holden presided; about 66 persons present.

The Recording Secretary was instructed to include in the minutes of the previous meeting resolutions of respect to the memory of Dr. G. L. Magruder, which by a misunderstanding had been omitted from the program.

Dr. G. Wythe Cook, from the Executive Committee, reported the form of a letter to the editor of the *Journal A. M. A.* On mo-

tion of Dr. J. D. Thomas, the proposed letter was amended and adopted as amended.

The Chair appointed as a committee on revision of traffic regulations, Drs. Sprigg, A. B. Hooe and Avery.

Dr. Maximilian P. E. Groszmann, of the National Association for the Study and Education of Exceptional Children, addressed the Society on "The Medical Aspect of the problem of the exceptional child." Discussed by Drs. Woodward, T. A. Williams, W. A. White and Hickling.

Wednesday, March 18.—Vice President Holden presided; about 70 persons present.

A letter from the editor of the *Journal A. M. A.* was read and referred to the Executive Committee for such action as the committee should see proper.

The Corresponding Secretary was instructed to extend the courtesies of the Society to Surgeon General Gorgas of the Army and Surgeon General Braisted of the Navy.

The Society ordered the purchase of a "view box" to exhibit x-ray plates.

Appropriations were made as follows: $40.00 for use of hall; $3.20 for typewriting for Executive Committee.

Dr. C. W. Richardson presented a case of recent Frontal sinusitis, with radiogram.

Dr. F. R. Hagner demonstrated a new method of preventing hemorrhage after suprapubic prostatectomy. Discussed by Drs. Fuller and Frank Leech.

Dr. J. H. Selby read the paper of the evening: "The importance of the combined cystoscopic and radiographic examination," with lantern slides. Discussed by Drs. Groover, Merrill, Hagner, Kemble, Christie (U. S. A.) and Selby.

Wednesday, March 25.—Vice President Davidson presided; about 95 persons present.

A letter from Dr. F. H. Garrison was read, stating that Dr. Monod, of Paris, would be able to address the Society on "Post Graduate medical study in France." The Program Committee was authorized to make arrangements. Captain Christie, U. S. A., offered the use of a cinematograph from the Army Medical School for use in the address; the offer was accepted with thanks.

A resolution of the Men's Club of the Church of the Ascension was read, urging the Society to assume leadership in seeking the enactment of some law for the purpose embodied in House Bill 13,219, and was referred to the Executive Committee.

Dr. Hooe, for the Committee on Smoker for the Virginia Medical Society, reported that it was believed to be unwise for the Society to levy an assessment for the purpose of the Smoker. Report adopted.

Dr. L. Neuman showed a collection of preparations of appendices in gelatine. Discussed by Drs. A. F. A. King, D. S. Lamb and Neuman.

Dr. J. R. Verbrycke, Jr., read a paper on "Chronic perforation of peptic ulcer" with report of four cases. Discussed by Drs. Clark, Mallory and Verbrycke.

Dr. H. H. Kerr read a paper on "Arterio-venous anastomosis for threatened gangrene," with report of case. Discussed by Drs. Lowe and Neuman. See page 202.

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Editorial.

History of the Medical Society of the District of Columbia.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

The Washington Medical Annals, the official organ of the Medical Society of the District of Columbia, issued the first of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

THE ALUMNI MEDICAL SOCIETY OF GEORGETOWN UNIVERSITY has an active membership of 110 members and meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

CLINICAL SOCIETY.—Officers: D. W. Prentiss, President; F. L. Biscoe, Vice President; W. J. Mallory, Secretary-Treasurer; Censors: L. A. Johnson and J. D. Thomas.

Program of Meetings:

Meeting place.	*Essayist and Date of meeting.*	*Discussion by.*
Dr. Wells	Dr. Clark	Dr. J. B. Nichols
The Rochambeau	October 12	
Dr. Barton	Dr. Mallory	Dr. W. E. Clark
1730 Conn. Av., N. W.	November 9	
Dr. Reichelderfer	Dr. J. D. Thomas	Dr. Hurtt
1721 Conn. Av., N. W.	December 14	

CLINICO-PATHOLOGICAL SOCIETY.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership after 15 years. A limited honorary membership of eminent medical men. Meets on the first and third Tuesdays of the month from October to May, inclusive. Officers: President, Dr. B. L. Hardin; Vice Presidents, Drs. Thos. S. Lee and Wm. Earl Clark; Secretary and Treasurer, Dr. B. M. Randolph.

THE FREEDMEN'S HOSPITAL MEDICAL SOCIETY meets on the second Wednesday of each month from October to May, inclusive. Its membership is composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. The present officers are E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

THE GALEN SOCIETY OF THE DISTRICT OF COLUMBIA.—Schedule of meetings, session of 1913–14:

1914.	*Place.*	*Essayist.*
May 18	Dr. Stuart, Army and Navy Club	Dr. Bogan.
Oct. 19	Dr. Kearney, 1229 O Street	Business Meeting. President's Address.

David W. Tastet, President; Carl Henning, Secretary.

GEORGETOWN CLINICAL SOCIETY; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

The Hippocrates Society, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year are L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

Medical History Club of Washington, D. C., 1913–1914. Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H. W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig.

Medical and Surgical Society of the District of Columbia.—President, H. P. Parker; Vice President, D. P. Hickling; Secretary and Treasurer, L. Eliot; Recording Secretary, L. C. Ecker; Executive Council, A. R. Shands, O. A. M. McKimmie, L. Eliot, E. P. Copeland and L. H. Reichelderfer.

Society of Ophthalmologists and Otologists, Washington, D. C., 1913–1914. — Officers: President, J. J. Richardson; Vice President, L. S. Greene; Secy.-Treas., A. B. Bennett, Jr.

Membership.—Active Members: Drs. A. B. Bennett, Jr., J. H. Bryan, W. K. Butler, John W. Burke, Virginius Dabney, H. S. Dye, L. S. Greene, F. M. Chisolm, Carl Henning, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. P. Malone, W. B. Mason, M. E. Miller, S. B. Muncaster, Mead Moore, W. S. Newell, H. A. Polkinhorn, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive Members: Drs. W. N. Souter, C. W. Richardson, D. K. Shute, W. H. Wilmer, Wm. H. Fox.

Meetings are held on the third Friday in each month from October to May, inclusive.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

THE WALTER REED MEDICAL SOCIETY meets on the fourth Thursday of every other month, from September to May inclusive. It is composed of physicians located in the eastern part of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

THE WASHINGTON SOCIETY OF NERVOUS AND MENTAL DISEASES has inaugurated its seventh session by re-electing last year's officers as follows: President, Dr. Tom. A. Williams; Vice President, Dr. W. M. Barton; Secretary, Dr. W. H. Hough. The Society has a limited membership but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. It meets monthly on the third Thursday at the Cosmos Club or a member's residence.

THE WOMEN'S MEDICAL SOCIETY of the District of Columbia held the last meeting of the season, May 5, in Baltimore, where the members were the guests of Drs. Anna Pollock and Patience Bordeau-Sisco. The women physicians of Baltimore were also guests. The paper of the evening, "Twenty years of gynecology," was presented by the President, Dr. Sophie Nordhoff-Jung. Officers for the ensuing year were also elected: President, Dr. Jung; Vice President, Dr. Ada R. Thomas; Secretary and Treasurer, Dr. A. Francis Foye; Corresponding Secretary, Dr. Margaret R. Stewart.

THE SECRETARIES of the other Medical Societies of this District are reminded that the ANNALS will publish the schedules of their meetings.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

THE 19TH INTERNATIONAL CONGRESS OF AMERICANISTS.—We have been requested to invite attention to the fact that this Congress will meet in this city October 5 to 10, 1914. The meetings will be held at the new U. S. National Museum building under the auspices of the Smithsonian Institution, coöperating with other institutions and societies in this city. Drs. Frank Baker, G. M. Kober and J. D. Morgan are members of the Organizing Committee. Dr. Ales Hrdlicka of the National Museum is the Secretary. The membership fee is $5.00, and the Associate Membership fee $2.50, payable to the Treasurer, Clarence F. Norment, 1851 Wyoming Avenue, N. W.

The American Society for Physicians' Study Travels will make its first tour immediately after the close of the next meeting of the American Medical Association, starting from Atlantic City June 26. The complete itinerary can be obtained upon application to the Secretary, Dr. Albert Bernheim, 1225 Spruce Street, Philadelphia, and it will be found to promise an interesting, pleasant and profitable outing to all participants. The objects of the newly-formed organization are in the main to afford an opportunity to make the best use of one's vacation, time and money, in seeing cities health resorts, and gaining practical knowledge of their institutions—medical, historical, and municipal—as well as to attend clinics, demonstrations, lectures illustrated with lantern slides, and public addresses.

In addition, however, many sight-seeing trips have been arranged for, and the path of the Society lies by rail and water through a section of this country and Canada abounding in picturesque, sylvan and grand scenes, so that the tourist, whatever his individual taste, will enjoy the advantages of healthful recreation *en route*. It is believed that American physicians and their wives will appreciate the benefits of these tours, which have become so popular, both in Germany and France, where they are undertaken even more than once annually.

Early bookings, through the Secretary, are urged, in order that satisfactory accommodations can be secured for all who desire to participate.

Conservation of Vision, &c.—The Council on Health and Public Instruction of the A. M. A. has published and has for sale the following pamphlets, which may be obtained at the prices stated and from the office of the Association, Chicago:

1. School children's eyes; by Frank Allport.
2. Industrial and household accidents to the eye; by Harold Griffith.
3. Wearing glasses; by W. B. Lancaster.
4. Relation of illumination to visual efficiency; by E. M. Alger.
5. Trachoma in eastern Kentucky; by J. A. Stucky.
6. Auto-intoxication and the eye; by H. D. Burns.
7. Eye-strain; by Hiram Woods.
8. Lenses and refraction; by Frank Allport.
9. The eye and its functions; by Frank Allport.
10. Care of the eyes; by Frank Allport.
11. Child culture the function of organized medicine; by H. P. Favill.
12. Control of cancer; by J. C. Bloodgood.
13. Municipal regulation of milk supply; by E. O. Jordan.
14. Death and blindness from methyl or wood alcohol poisoning, with means of prevention; by C. A. Wood.

All the above are excellent, suitable for patients and others; the names of the authors are sufficient guarantees.

American Academy of Medicine.—Thirty-ninth annual meeting, Atlantic City, June 19 to 22, 1914. Headquarters, Hotel Dennis.

Embryological Study.—Drs. F. P. Mall, Professor of Anatomy, Johns Hopkins, and H. M. Evans, Research Associate, Carnegie Institution, make an appeal for human embryos. An appeal to physicians and surgeons to send such material as opportunity affords. So far over 800 specimens have been received, and on these more or less over 100 papers have been published. All material passed in abortions; if the embryo or fetus is not apparent, the tissue fragments may contain the ovum, and are desirable. Tubal pregnancies, if possible unruptured. Pregnancies *in situ* removed for malignant diseases or otherwise. Curettings before the menopause, if one or more periods have been passed. The specimen should as soon as possible be placed in 10 per cent. formalin and the bottle should be filled up to avoid shaking. Address either Dr. Mall or Dr. Evans, Johns Hopkins Medical School, Baltimore. If the contributor has not the conveniences, Dr. D. S. Lamb, of the Army Medical Museum, will undertake the care and transmission.

American Proctologic Society.—Sixteenth annual meeting, Atlantic City, June 22 and 23, 1914. Headquarters, The Chalfonte. President, J. M. Mathews, of Louisville, Ky.; Vice President, J. A. MacMillan, Detroit, Mich.; Secretary-Treasurer, A. J. Zobel, San Francisco, Cal. Dr. T. C. Martin, of Washington, is a member.

Chevy Chase Sanitorium, 32d and Tennyson streets, Pinehurst, Chevy Chase. For convalescents, cases of general enfeeblement, alcohol and drug habitués, and patients with mental or nervous disorders. Can be reached by street car via Chevy Chase circle; or visitors will be met by an attendant with automobile, at the circle, on request. Address Dr. B. R. Logie, in charge.

Major Frederick F. Russell, U. S. A.—The following extract from a letter from Dr. Russell will be appreciated: "I thank you for the copy of the Annals which arrived today. I have read it from cover to cover and enjoyed it all, for many reasons, but especially because practically all of the speakers are known to me, and I could readily picture the reader of the paper and his audience in each instance."

Dr. Russell at present is at Vera Cruz.

Laboratory for the study of the criminal, pauper and defective classes.—Dr. Arthur MacDonald of this city is still trying to get Congress to pass the bill, House Bill 7022, which has been reported favorably three times from the committee.

He states that the State Department has communicated the proposed plan to all the leading foreign governments, and Russia and Belgium have adopted it. He now addresses College and University students, urging them to give special attention to these subjects. His letter is too long for us to publish in full. He may be addressed at "The Congressional," this city.

Mrs. Ann Matilda Coumbe, widow of the late Dr. John T. Coumbe, died April 7. Dr. Coumbe, though not a member of the Medical Society, was elected a member of the Medical Association of the District, October 7, 1873. He graduated in medicine at Georgetown Medical School in 1872; died March 7, 1895.

Dr. Magnus L. Julihn, a well-known druggist of Washington, died at Alameda, Cal., April 4.

Mr. Charles F. Ford, son of the late Dr. C. M. Ford, died in this city May 4.

Mrs. Rachel E. McLaughlin, mother of Dr. T. N. McLaughlin, of this Society, died in this city May 3.

Dr. A. P. Bogue, a well-known physician of this city, employed in the Pension Office, died May 10, in his 87th year.

Dr. A. J. O'Malley died of nephritis at St. Agnes Hospital, Philadelphia, March 3. Dr. O'Malley graduated at Georgetown in 1893, became a member of this Society April 3, 1895, removed the same year to South Bend, Indiana, and in 1904 to Philadelphia. He was a member of the Medical Society of Pennsylvania, and was for fifteen years Chief of Staff at the St. Agnes Hospital. See History of the Medical Society, page 354.

Dr. Wm. T. Ramsey, George Washington Medical School, 1871, died at Cambridge, Ohio, Jan. 19, age 66. He became a member of this Society October 6, 1874. In 1881, removed to Washington, Ohio, afterwards to Cambridge. See History of the Society, page 301.

Dr. Charles R. Clark died April 19, at San Antonio, Texas. He graduated at Columbian Medical College in 1889; was elected a member of this Society October 4, 1893; removed in 1896 to Warsaw, N. Y. See History, page 537, and halftone No. 46, page 177.

American Pediatric Society.—Twenty-sixth annual meeting, May 26 to 28, at Stockbridge, Mass.; sessions at the Red Lion Inn. Dr. S. S. Adams, of this Society, is the Secretary.

American Medical Editors' Association.—Annual meeting June 22, 9 A. M., Marlborough-Blenheim Hotel, Atlantic City. President, Dr. E. A. Vanderveer; Secretary and Treasurer, J. MacDonald, Jr.

THE FOLLOWING AMENDMENT to the Legislative bill, as reported to the Senate May 15, 1914, page 147, under "Children's Bureau," has been introduced into the Senate: "Provided, that the chief and assistant chief shall be experts in child study, and provided further, that the supervisory officers and all other persons now or hereafter employed in the Bureau, in investigations of infant mortality, diseases of children and similar subjects of a medical nature, shall have had a medical training."

NOTICES.

The Committee on Publication has received the following:

"The Bureau for the Protection of Medical Research of the American Medical Association is desirous of obviating as completely as possible any cause for complaint against animal experimentation, as well as any criticism of new methods in medical practice. Much of the 'evidence' cited by hostile agitators is taken from articles in journals devoted to the medical sciences.

"Instances are frequently cited in which it is claimed that, as there is no mention of anesthetics, animals have been experimented on without anesthesia. Well known methods of medical diagnosis are described as experiments, because authors have been careless in their descriptions.

"Will you not aid the efforts of the Council by a very careful examination of articles submitted to you for publication, with especial reference to the use of words or expressions likely to cause misapprehension regarding the experience of the animals used for research? And in every instance in which anesthesia is a condition in the investigation, will you not point out to authors the importance of making this fact prominent? In clinical articles which discuss new or unusual methods of diagnosis and treatment, it is important to make clear that these methods are undertaken with the consent of the patient or his relatives. This is especially imporant in connection with children. We hope that by the coöperation of all who are interested in the promotion of medical science the development of a public opinion hostile to medical research may be checked, and that there may be, instead, a growth of popular understanding of the aims, the methods and the significance of the results of animal experimentation and their practical application in the relief of suffering in man."

"The Council on Health and Public Instruction of the American Medical Association has established a medico-legal bureau for the purpose of collecting, arranging and studying all of the available material, bearing on medico-legal questions of interest to physicians, or relating to public health matters. This bureau is in charge of Mr. John D. Hubbard, a graduate of the Northwestern

University School of Law We desire to secure all available material, bearing on medico-legal subjects, especially all pamphlets, bulletins, monographs, circulars, legislative bills, laws, reports or special articles on any medico-legal or public health topics. As rapidly as material can be secured and studied, we hope to furnish information to all those interested on any topic coming within the range of the bureau. We shall greatly appreciate it if you will kindly send us, at any time, any such material that may come into your hands. This will be properly classified, catalogued and preserved for use in answering inquiries on any medico-legal question. We hope to make this bureau of service to the officers and members of State associations, executive officers of State boards of health and medical examining boards and any others interested. Any assistance or contributions will be appreciated and of great assistance in carrying out the plans of the bureau."

REVIEWS.

"Stammering and Cognate Defects of Speech"; by C. S. Bluemel. Published by G. E. Stechert and Company, New York. Two volumes. Price $5.00 net.

This is the only satisfactory work on stammering which the reviewer knows of. The author is a professional psychologist, himself a stammerer. In Volume 1, is first explained the mental imagery comprised in speech and its disorders; then the data are applied to the study of the mechanism of stammering. The chief factors are auditory amnesia with mental confusion; auto-suggestion with fear; and faults of the physiological co-ordinations. The first of these is believed by the author to be usually a congenital defect homologous to the dyslexia found in about 1 per cent. of school children. This, in the author's opinion, is the only true stammering; and of course it is a form of aphasia. This opinion the author illustrates by a case which entirely recovered from dysarthria; but this does not appear to be a good argument in favor of the author's contention that stammering is in reality a form of auditory aphasia or amnesia; although his arguments that it is not a form of aphemia are in the main cogent enough; for it never occurs in the congenitally deaf who are taught to speak, the reason for which he believes to be fundamental and not accidental, as Gutzman thinks. The importance of this factor in estimating the educational capacity of children has been almost overlooked.

The author's remedy, when this congenital defect cannot be compensated by acoustic imagery, is to cultivate the kinesthetic imagery as is done in deaf mutes. The auto-suggested factor is the one which is sometimes removed by the attempts of the incom-

petent "systems" which are advertised so much and throw so much disrepute upon scientific attempts to treat stammerers. Among these, the author includes the system of psychoanalysis of the Freud school, which he stigmatises in a scathing fashion as being based upon "a superlatively superficial psychology, unequivocally stultified by use of symbolism, which can interpret the material of any case to suit the circumstances." This is considered in Volume 2, along with all the other systems. They are classified according to whether they lay most stress upon respiration, vocalisation and vowel production, articulation, verbal exercises, etc., mechanical appliances, etc., and psychological methods. The treatise is concluded by a chapter entitled "Stammering Schools" and "Speech Specialists," which may be commended to those medical organizations which are endeavoring to combat quackery. There is an admirable bibliography, and a glossary, and index, which should be particularly useful to laymen. The book is so clearly written and so interesting and free of padding, while comprehensive, that it should appeal not only to physicians but to all who are interested in human development.

—Tom A. Williams.

Diagnostic Methods. By Herbert T. Brooks, A. B., M. D., Professor of Pathology, University of Tennessee. Second Edition. St. Louis, C. V. Mosby Co., 1914.

As its sub-title indicates, this little work is intended as a guide for history taking, making routine examinations and the various laboratory tests demanded by modern diagnostic methods. It makes no pretense to be an exhaustive treatise on these methods, but is a convenient summary, useful to students, internes, and to such physicians as make their own examinations. There are some omissions. For instance, the Wasserman reaction is given in full but no mention is made of the Noguchi modification of this test. Also, one might expect that in a manual published in 1914, some allusion would be made to the Abderhalden test for pregnancy. These, however, are minor defects and do not mar seriously the real worth of the manual. Its moderate price, one dollar, should place it within the reach of all to whom such a work would be helpful.—Edward A. Balloch.

RECENT PUBLICATIONS OF PHYSICIANS OF THE DISTRICT OF COLUMBIA.

G. N. Acker; Parotitis complicated with meningitis; *Amer. Jour. Dis. Child.*, December, 1913, page 399.

C. C. Ammerman, P. H. S.; Medical experiences in the Amazonian tropics; U. S. Naval Med. Bull., April, page 270.

J. F. Anderson; Danger in the subcutaneous injection of solu-

tions of crotalis; report of fatal case; *Jour. A. M. A.*, March 21, page 893.

S. H. Ayres and W. T. Johnson, Jr.; Pasteurization in bottles and process of bottling hot pasteurized milk; *Jour. Infect. Dis.*, March; abstracted in *Jour. A. M. A.*, April 18, page 1284.

W. M. Barton; The favorite formula or pet prescription; *Jour. A. M. A.*, April 11, page 1167.

Rupert Blue; The needed reforms in sanitary administration; Bull. State Board Health, Ky., Nov., 1913, page 40. Also, An open letter to owners, agents and masters of lake and river vessels; Reprint 174 from Public Health Reports, March 20.

J. W. Boveé; Mummified, advanced abdominal pregnancy, complicated by uterine fibroids; *Amer. Jour. Obstet.*, March, page 506.

E. P. Copeland; Leopold Auenbrugger and percussion; *Va. Med. Semi-Mo.*, May 22, page 94.

C. F. Craig and H. J. Nichols, U. S. A.; Studies of syphilis; Bull. No. 3, War Dept., Office Surgeon General; abstract in U. S. Naval Med. Bull., April, page 300.

H. K. Craig; A new method of preparing museum specimens; *Jour. A. M. A.*, April 18, page 1241.

H. S. Cumming, P. H. S.; The pollution of tidal waters; Reprint 181 from Public Health Reports, April 10.

C. H. Dewey; Treatment of trachoma; *Ophthalmic Record*, April.

C. R. Dufour; Hypertrophied faucial, pharyngeal and lingual tonsils; their significance and treatment; *Charlotte Med. Jour.*, February. Also, Hemorrhage and other ophthalmoscopic findings in the eye and their significance; *Va. Med. Semi-Mo.*, April 10, page 8.

John Dunlop; Foot strain; *Ibid.*, page 13.

W. G. Erving; Diagnosis and treatment of joint fractures; same journal, May 22, page 86.

C. M. Fauntleroy; Ankylostomiasis; *Amer. Jour. Trop. Dis.*, April 1.

W. A. Frankland; Method of testing renal function with phenol-sulphone-phthalein; WASHINGTON MEDICAL ANNALS, March, page 143; abstracted in *Jour. A. M. A.*, April 18, page 1287.

Joseph Goldberger; Some new cholera selective media; Bull. 91, Hygienic Laboratory, December, 1913.

M. Hahn; Gastric digestion in infants; *Amer. Jour. Dis. Child.*, April; abstracted in *Jour. A. M. A.*, April 18, page 1282.

Worth Hale; The cause of death from subdural injections of serum; Bull. 91, Hygienic Laboratory, December, 1913.

H. H. Hazen; Bacteria therapy in diseases of the skin; *South. Med. Jour.*, March.

W. H. Hough ; Intraspinous injection of salvarsanized serum in the treatment of syphilis of the nervous system, including tabes and paresis ; *Jour. A. M. A.*, January 17 ; abstracted in U. S. Naval Med. Bull., April, page 304.

A. J. McLaughlin, P. H. S. ; Results of an improved public water supply at Cohoes, N. Y. ; *Jour. A. M. A.*, May 16, page 1549.

H. M. Manning ; A national medical examining board ; same journal, March 21, page 950.

F. B. Martin ; Some salient points in the construction of hospitals ; *Modern Hospital*, February.

T. C. Merrill ; Clonus in toxemia of pregnancy ; *Amer. Jour. Obstet.*, March.

H. J. Nichols, U. S. A. ; Syphilis as a public health question ; *Jour. A. M. A.*, May 16, page 1525. Also, Strain of spirochaeta pallida, isolated from nervous system ; *Jour. Exp. Med.*, April ; abstracted in *Jour. A. M. A.*, April 25, page 1359.

C. M. Oman, U. S. N. ; Medical and surgical work on board a United States battleship ; *Jour. A. M. A.*, May 16, page 1541.

C. A. Pfender ; Autoserotherapy in serofibrinous pleurisy ; WASHINGTON MED. ANNALS, March, page 83 ; abstracted in *Jour. A. M. A.*, April 18, page 1287. Also, Peripheral paralysis of seventh cranial nerve ; *Va. Med. Semi-Mo.*, April 10, page 4.

H. F. Kane ; Technic of closing abdominal incisions ; *Surg., Gynec. and Obstet.*, March.

J. T. Kelley ; Case of gallstones with cholecystitis ; *Va. Med. Semi-Mo.*, April 10, page 17.

Louis Kolipinski ; Note on the administration of digitalic acid, the acid resin of digitalis purpurea ; *Mo. Cyclop. and Med. Bull.*, April, page 229.

L. L. Lumsden ; Typhoid fever prevention ; Bull. State Board Health, Ky., November, 1913, page 68.

W. C. Rucker ; Public health administration ; Reprint No. 171 from Public Health Reports, March 6.

A. R. Shands ; Heavy braided silk used to replace a destroyed patella tendon ; *Va. Med. Semi-Mo.*, April 24, page 31.

R. W. Shufeldt ; The laboratory of comparative pathology of the Zoölogical Society of Philadelphia ; *Pop. Sci. Mo.*, May.

G. M. Sternberg ; Home treatment of pulmonary tuberculosis ; *Jour. Outdoor Life*, April.

E. R. Stitt, U. S. N. ; A satisfactory method for easily obtaining material from syphilitic lesions; U. S. Naval Med. Bull. April, page 242.

E. R. Stitt and G. F. Clark, U. S. N.; An easy method for obtaining blood cultures and for preparing blood agar ; *Ibid.*, page 283.

E. B. Vedder ; Origin and present status of the emetine treatment of amebic dysentery ; *Jour. A. M. A.*, Feb. 14 ; abstracted in U. S. Naval Med. Bull., April, page 319.

J. R. Verbrycke; Dyspepsia; *Va. Med. Semi-Mo.*, May 8, page 62.

W. A. White; Meaning of faith cure and other extra-professional cures in search of mental health; *Amer. Jour. Pub. Hlth.*, March.

W. A. White and S. E. Jelliffe, Editors of "The modern treatment of nervous and mental disease," by eminent American and British authors; Published by Lea and Febiger, Philadelphia, 2 vols; $6.00 net.

C. L. Wilbur; Accurate vital statistics the basis for public health work; Bull. State Board Hlth., Ky., November, 1913, page 6.

T. A. Williams; Contrast in psychoanalysis; three cases; *N. Y. Med. Jour.*, April 4. Also, Nervousness in children; how to prevent and cure it; *Pacific Med. Jour.*, May, page 277.

Medical and Surgical Society, District of Columbia; *Va. Med. Semi-Mo.*, April 10, page 18.

PERSONAL NOTES.

Dr. A. R. Barrow, Asst. Surg., Med. Res. Corps, U. S. Navy, has been ordered to Training Station, Newport, R. I.

Dr. Rolla Camden, 915 Sixteenth St., announces that his practice is limited to Gastro-entero-proctology.

Dr. A. W. Dunbar, Surgeon, U. S. Navy, has been detached from the Naval Hospital, and assigned as Fleet Surgeon, Atlantic Reserve Fleet.

Dr. Francis E. Harrington, Health Officer of Cumberland, Md., has won his suit for libel against one of the daily papers of that city. The suit was based on charges of graft and abuse of power, unnecessary quarantine and incorrect diagnosis in the management of the outbreak of smallpox in Cumberland. At the trial Dr. Harrington was submitted to a most grilling cross-examination for two days, and acquitted himself satisfactorily. Dr. L. Eliot was subpoenaed as an expert on smallpox. Dr. Harrington, although residing in Cumberland, still holds his membership in the Medical Society of the District of Columbia.

Dr. D. P. Hickling announces that he will devote himself entirely to practice in Nervous and Mental Diseases, 1304 R. I. Avenue.

Dr. Richard A. Kearney, Assistant Surg., P. H. S., was married April 21 to Miss Edmonia Adams, in Washington.

Dr. G. M. Kober was elected President and Rupert Blue Director of the National Association for the Cure and Prevention of Tuberculosis, at the meeting May 4 to 8.

Dr. C. D. Langhorne, Surgeon, U. S. Navy, has been transferred from the Marine Barracks, Washington, to the *Vermont*.

Dr. C. P. Lynch, Asst. Surg., U. S. Navy, has been transferred from the Naval Medical School to the *Tacoma*.

Dr. Walter D. McCaw, Col., Med. Corps, U. S. A., late in charge of the Army Medical Museum and Library, has gone to the Philippines.

Dr. Donald H. Noble, Passed Asst. Surg., U. S. Navy, was married March 14 to Miss Ann Elizabeth Leay, of Washington.

Dr. J. L. Phillips, Col., Med. Corps, U. S. A., has been ordered to the charge of the Walter Reed Hospital, relieving Col. H. C. Fisher.

Dr. C. C. Pierce, Surgeon, P. H. S., is preparing an exhibit for the Panama-Pacific Exposition.

Dr. P. C. Fauntleroy, Major, Med. Corps, U. S. A., was married April 18 to Miss Mary Dalrymple, at York, Pa.

Dr. French Simpson, Passed Asst. Surg., P. H. S., is ordered to the Hygienic Laboratory for duty.

Dr. C. G. Stone announces that he will be glad to serve his old medical and legal friends in the capacity of "medical adjuster," and his services may be commanded at all hours in consultation cases. 5657 Georgia Avenue. Dr. Stone has been ill for several years, and was compelled by his illness to resign his place as surgeon and adjuster for the Washington Railway and Electric Company.

Dr. Edgar Thompson, Surgeon, U. S. Navy, has been ordered to the Naval Hospital, Washington, for duty.

Dr. M. D. Weed, Captain, Med. Corps, U. S. Army, has been transferred from the Washington Barracks to Fort Ethan Allen, Vermont.

Dr. E. L. Woods, Passed Asst. Surg., U. S. Navy, has been transferred to the Naval Hospital, Washington.

The following Washington physicians are members of the Council on Pharmacy and Chemistry of the A. M. A.: L. T. Kebler, M. I. Wilbert and H. W. Wiley.

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WASHINGTON MEDICAL ANNALS

NOTE ON KANGRI-BURN CANCER.*

By A. F. A. King, M. D.,

Washington, D. C.

In reply to my enquiry as to the relative frequency of Kangri-burn cancer in married and unmarried women (see this journal for March, 1914, p. 124), Dr. Ernest F. Neve writes that he "cannot remember a case of Kangri-burn cancer in an unmarried woman," but he adds "this is due to the fact that it is a disease of middle or advanced age, and practically all women are married by that time."

He states that he has "never seen a case of Kangri-burn cancer before puberty."

In my paper read before this Society in February last, it may be remembered that according to my hypothesis, if Kangri cancer cases were caused by the conjoint factors of *chronic irritation* from burns, and *spermatic fertilization,* it should follow that the disease would occur more frequently in males than females; more often in married women than single ones; and not at all before puberty.

All three of these predictions were verified, and yet this verification affords no support whatever to the hypothesis in question, showing how very misleading figures and statistics may be in matters of medical research unless subjected to proper analysis. Thus the greater frequency of the disease in men (as shown by the hospital reports) was accounted for by the great prejudice, in India, against women entering hospitals; the rarity of the disease in unmarried women was explained by unmarried women themselves being rare; and the non-occurrence of the disease before puberty falls in line with the well-known rarity of all kinds of cancer in early life.

The reply of Dr. Neve as to the further question, viz: what proportion of Kangri-burn cases become cancerous, seems, at first sight, to directly conflict with my idea, yet in reality it does not. He says: "Burns are so very common that the proportion

*Read before the Medical Society April 1, 1914.

which become epitheliomatous must be very small indeed. Not, I should say, one per cent." Here then we find a large part of the population with burns, and with the liability to spermatic fertilization, and yet scarcely one in a hundred get cancer. How is this to be explained? It should be remembered that the successful fertilization of a somatic epithelial cell, and its consequent segmentation and progressive development into the abortive embryonic new-formation we call cancer (like the fertilization and embryonic evolution of a germinal epithelial cell in normal reproduction) can only take place under a well defined complex of environing conditions. Some of these conditions (and there may be others), would seem to be that the fertilizing sperm, and the subsequent fertilized cell, should be protected from air; that they should be surrounded by a liquid and nutritive plasma; and be shielded from dessication. No one can imagine the development of an embryo in the open air, or when bereft of a nutritive pabulum, or when subjected to drying by artificial heat; and the same is probably true with regard to the development of fertilized somatic epithelial cells stimulated to attempt the pseudo-embryonic evolution that produces cancer. Now in the Kangri-burn cases, not only is the fertilizing sperm applied upon the surface and exposed to air, but it, and the fertilized cell (should fertilization occur) are subjected to the dessicating influence of an abnormal degree of artificial heat by subsequent applications of the fire-basket. Under these circumstances the wonder would seem to be that even so large a proportion as one per cent. of the burn cases should become epitheliomatous.

Yet, since they occasionally do so, how can their exceptional occurrence under these adverse conditions be explained?

Presumably a few spermatozoa (more fortunate than their neighbors) find their way to some plasma-filled interstice beneath the surface—perhaps under some partially separated scab covering an ulcer—where the segmenting epithelial cells are protected from air, heat, and dessication, and are engulfed in a nutritive pabulum, and hence their development into cancer becomes possible. It would be interesting to learn (if we could) whether the *beginning* of epithelial cancer, in the Kangri-burn ulcers, be more likely to occur, when the winter is over and the warm weather of spring leads the people to relinquish the use of their fire baskets. Under such circumstances, while the old burns of winter are still open, there would seem to be a better chance for the spermatozoa, and fertilized cells, to survive, than when subjected to the abnormal heat of the charcoal brazier. Thus we might predict that the cancer formation is more apt to *begin* during the vernal season; when, too, the *quantity* of sperm produced is probably greater than during winter. But this remains to be determined.

At any rate, when the rarity of cancer in Kangri-burn cases is thus explained, the small percentage of epitheliomatous cases in no way conflicts with the main idea of cancer having its origin in the fertilization of somatic epithelial cells by sperm. If we can ever expect to produce cancer cells, *de novo,* artificially, which has not yet been done, we must imitate as far as possible, the conditions necessary for fertilized reproductive cells undergoing normal embryonic evolution.

Thus we learn that the mere application of sperm to chronic ulcerative surfaces (which I have elsewhere suggested should be done by way of experiment), may not be successful in producing cancer. The sperm should be inserted *beneath* the surface by a hypodermic needle, or placed in fissures produced by scarification or incision, so that the fertilized cells are protected from obnoxious external agents and surrounded by a suitable nutritive culture medium.

Dismissing now the subject of Kangri-burn cancer, I should like to conclude by adding still another fact, that *seems* to conflict with my theory, but really does *not.* Dr. M. Haaland reports (*Proc. Roy. Soc. of London, Series B, Biological Sciences, Feb.* 17–1911, *pp.* 532-540) that as many as two or three hundred mice in one of the Laboratories, had a spontaneous development of cancer, and some of these mice had never been in contact with a male since their birth. At first sight this would seem to be a fatal refutation of my spermatic fertilization hypothesis. Not so, however, when Dr. Haaland himself explains that these spontaneous cancers in mice were produced by the embryonic development, in the subcutaneous tissues, of the fertilized ova of nematode worms:—the very same explanation which accounted for the Bilharzian cancers so common among the human inhabitants of Egypt and Assyria. (See MEDICAL ANNALS for March, 1914, p. 126.)

In both instances the cancer consisted of an embryonic growth, which had *its* origin in the fertilization of germinal epithelial cells by sperm.

1315 Massachusetts Avenue, N. W.

NO ALTERNATIVE.—Doctor (to operetta Diva who wishes to be vaccinated)—"Shall I vaccinate your arm?"

Diva—"Heavens! No, of course not. Think of me as an artist with a scar on my arm! You must vaccinate me where it won't show."

Doctor—"I think you had better take it internally."

THREE RECENT ABDOMINAL CESAREAN SECTIONS OF INTEREST.*

By W. Sinclair Bowen, M. D.,

Washington, D. C.

1. Mrs. T., age 26, primipara, very fat, weighing 275 pounds, was brought to me at midnight, February 9, 1914, by Dr. G. B. Fadeley, of Falls Church, Virginia. She was at term and had been in labor four days, first under the care of a midwife and later was attended by her physician. Upon examination I found pelvic measurements normal, vertex presentation, right posterior position. The os was dilated about the size of a quarter and was very rigid. The head was impacted in the superior strait and it seemed to be immovable upward or downward; membranes had been ruptured and patient's condition was fairly good.

After a consultation with the attending physician and the obstetric interne, we decided that it would be difficult and possibly dangerous to both mother and child to deliver *per vias naturales*, and accordingly a Cesarean Section was promptly done. A nine-pound child was delivered in good condition, but it took a little effort to dislodge the head from the pelvis. In view of the fact that this patient had been in labor four days and had had a number of vaginal examinations during that time, the vagina and cervix were carefully swabbed out with a 50 per cent. iodine and alcohol. After the fœtus and placenta had been removed, the entire uterine cavity was treated in the same way with a 25 per cent. solution.

The patient had a very normal convalescence. Now, the points for discussion in this case are: 1st. Was high forceps or Cesarean section indicated? 2d. Did the careful treatment of the entire genital tract with iodine, play any part in the aseptic convalescence?

2. Was sent into my service at Columbia Hospital after twenty-four hours' labor at her home. Patient's general condition good, Pelvimetry showed a general contracted pelvis; abdominal palpation, a vertex presentation, left anterior position, head floating freely above the superior strait, fœtal heart sounds distinct. Upon observing a linear scar on the abdomen and interrogating the patient more closely, we found that she had had three previous Cesarean Sections in the Columbia Hospital.

An abdominal Cesarean Section was promptly done for the fourth time, and the fœtus was delivered in good condition. There were a few adhesions between the omentum and the abdominal wall, but none between the uterus and the abdominal

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wall. Although this uterus had been opened three times there was scarcely any visible evidence of scar-tissue. Patient left the hospital after three weeks. She has now, four well developed children all delivered by Cesarean Section and she hopes to have more the same way. The points of interest in this case are: 1st. The number of Cesarean Sections on one patient, each being done by a different operator. 2d. The normal appearance of the uterus after three Cesarean Sections showing little or no scar-tissue. 3d. Absence of adhesions between the uterus and abdominal wall.

3. Mrs. D., primipara, 38 years old, has been more or less an invalid for fifteen years with chronic valvular disease of the heart and chronic tubular nephritis. This patient had been under my care more or less constantly for fifteen years and at times was very ill with dyspnoea, insufficient urine, headache, nausea, swollen limbs, insomnia, etc. When I was told, by her husband, some few months ago, that she was pregnant, I felt that the outlook for mother and child was very gloomy. This is the case upon which I made a preliminary report a few weeks ago to this Society when I asked for a discussion upon the best method of delivery and the choice of anesthetics. I decided to do an elective abdominal Cesarean Section as I did not believe the patient's heart would stand any other method of delivery. Accordingly, two weeks ago last Friday this plan was carried out and the result has been most satisfactory for mother and child. Ether was used as an anesthetic and the convalescence was quite as easy as from a normal labor.

The points of interest in this case are: 1st. That an elective Cesarean Section was performed for organic heart disease and is the first of the kind of which I am aware. 2d. When Cesarean Section is done upon a primipara before labor, should we do anything to the cervical canal to ensure drainage?

I report these three cases together, as they were all done about the same time (during the past month) all in the Columbia Hospital, and each one presents some points of study, and I am glad to say all terminated successfully for mother and child.

Report of X-Ray Examination of Mrs. D., by Dr. J. H. Selby: To determine position and presentation at the 8½ month. The outline of the foetal skeleton is seen to occupy a longitudinal position in the uterus, the convexity of the spine being toward the left. The trunk and extremities are situated entirely to the right of the spine; the head occupies a position in the false pelvis, the vertex being on a level with the superior strait and appears to be preparing to engage with the occiput to the left. The head is of fair size, there is no evidence of bony deformity of the

maternal pelvis, and the apparent ratio between the size of the foetal head and the pelvis would seem to indicate an unobstructed delivery.

DISCUSSION, FEBRUARY 18.

Dr. Bowen said that there was a murmur at the apex of the heart, and another, systolic in time, at the base. She had had no toxic symptoms, but the urine had stood at about 2½ pints daily output, and had contained albumin and hyaline casts. Under these conditions, how much should one depend upon a temporarily improved condition to sustain such a patient through labor? Should one depend at all upon the physiological hypertrophy of the left ventricle? Should one sit by and depend upon natural forces or should one do an elective Cesarean Section at or before labor?

Dr. Moran had not heard all of the report, but from what he had heard he would not hesitate to perform Cesarean Section in such a case. And with a blood pressure of 120 mm. he would employ nitrous oxid-oxygen anesthesia.

Dr. J. D. Thomas had seen this patient. The heart was in a remarkably good condition considering the long duration of the lesions and the frequent attacks of decompensation. There was a murmur of mitral insufficiency and an additional peculiar murmur at the base; the action and the tones were good. There were no signs of lack of full compensation. He could not say what the murmur at the base was due to; it may have been caused by some congenital defect. Some of the late authorities hold that there is no real physiological hypertrophy of the left ventricle in pregnancy; increased activity does take place but not structural hypertrophy. His interest centered in the question as to the ability of the heart muscle to stand the strain of labor. The conditions were all bad for an easy labor. Bad hearts have a remarkable ability to stand the strain of parturition; but the ability of the heart to stand this strain must be decided separately for each case. He inclined to agree with Dr. Moran's advice to prevent prolonged labor.

Dr. Chipman agreed with Dr. Moran's advice to use nitrous oxid-oxygen anesthesia in such a case; in Dr. Chipman's opinion it was the only anesthetic that should be used. In addition, he would suggest the infiltration of the tissues with a solution of novocain at each step of the operation. Little nitrous oxid need thus be used, and there would be a minimum strain on the heart.

Dr. Roy said that it seemed strange that this matter had not been brought before the Society before. In Hirschfelder's work it is stated that Schauta, of Vienna, had looked into the matter and was astonished to find how few mothers with heart disease die in labor; the babies are more apt to die. The co-existence of

nephritis puts this case in a class by itself. It is not uncommon to find a mitral murmur in pregnancy without much lesion to account for it. If the murmur should be aortic there is much more danger of sudden death in labor than in case of mitral disease. Of course the babies are apt to do badly. From the standpoint of the heart alone he would not necessarily agree with Dr. Moran's advice. The low blood pressure in this case argued against a serious kidney lesion, unless the heart was in such bad condition that a high pressure could not be sustained. The best way to arrive at a conclusion as to the condition of the heart muscle would be to take a sphygmographic tracing and see if *pulsus alternans* were present.

Dr. Jack said that from the description of the case it would seem that Cesarean Section would be the best procedure. And this might be done with infiltration anesthesia alone; if morphine and scopolamin are given as a preliminary, local anesthesia is sufficient, especially as great relaxation is not needed.

Dr. Snyder said that the kidney lesion seemed to him to be the most important factor in this case; why was it not discussed from that standpoint?

Dr. Moran said that mere presence of a chronic nephritis in pregnancy seldom led to a fatality; toxemia is the dangerous condition.

Dr. Bowen felt more concerned about the condition of the heart in this case than about the kidneys; he had seen so many labors with diseased kidneys go on without disturbance. His main concern was with the diseased heart; because the first patient he had ever seen die in labor was one with conditions very like these obtaining in the case reported, and he had seen two other similar cases with other men. This case was also complicated by a breech presentation, but spontaneous version had taken place.

DISCUSSION, APRIL 1.

Dr. I. S. Stone said that the present status of obstetric practice in this city is well reflected in these three cases; one might almost say that nowadays a woman may safely have a baby either way without much trouble. Dr. Bowen should be congratulated upon the record of three successive cases with such good results.

Dr. A. B. Hooe had come down expressly to hear the report of these cases. Dr. Bowen had shown that a caesarean section may be safely made even after very many vaginal examinations, which speaks very well for the technic with iodine and alcohol; although Dr. Hooe had seen similar successful cases without the use of iodine. The case in which the pregnancy was complicated by cardio-renal disease reminded him of a similar case in his own practice in which the woman was brought safely through by

caesarean section. All three of Dr. Bowen's cases were typical of those in which caesarean section is indicated; the operation is far superior to high forceps application.

Dr. Fry congratulated Dr. Bowen on the recovery of all his patients in these cases. When a woman has been in labor for three days and there have been many pelvic examinations, Dr. Fry himself had found the Porro operation much safer; although there may be a question whether with the iodine technic the Sanger operation had not become entirely safe. Polak, of Brooklyn, has done 80 consecutive cases safely. But the operation is so brilliant and so often successful, that it may easily be overdone. It is even recommended in eclampsia, in which case it is not properly indicated unless there is coincidently contracted pelvis. Vaginal caesarean section is too good an operation to be neglected in many of these cases. The high forceps operation may be said to have been superseded by the various section procedures. He thought it well to call attention to the work of Reynolds on the postural treatment of occipito-posterior positions; if early examination reveals the posterior position of the occiput, the woman should be placed in the knee-chest position and then should lie over on the side, which procedure will often correct the condition. He would advise everyone to use this maneuver.

As to the indications for caesarean section, he would be slow to do the operation to avoid natural labor in cardio-renal disease. The vast majority of such cases will do well by trusting to the natural forces. He recounted one case in his experience in which the woman died in the first stage of labor; by a rapid section he had extracted a living child. But in cardio-renal cases, the hard bearing down pains of the second stage must be avoided; at this stage the administration of ether will usually steady the pulse, and the child may safely be extracted by forceps.

Dr. A. F. A. King said that Dr. Fry's statement that caesarean section is overdone, opens a grave question. These obstetric operations are apt to go by fashions, and it is difficult to get to a fixed rule of procedure. Illustrating the present day frequency of the operation, he cited the following conditions in which the operation has been successfully done: (1) Prolapse of the cord; the indications for section lying in the fact that 50 per cent. of the children die when this accident occurs, and when version is done to save the child, the mother is jeopardized. (2) In cases of short and coiled cord; in these cases section has been done where it seemed to be impossible to deliver without jeopardizing the child. (3) In cases with normal pelvic measurements, but with over-large children with prematurely ossified heads. Such cases being an indication of the tendency of obstetricians to avoid high forceps extraction.

Dr. Prentiss Willson said that one would hesitate to express ideas contrary to the opinion delivered by Dr. Fry, but it seemed to him that we are approaching an age in which the indications for the performance of the caesarean operation will multiply rather than diminish. He himself has now done four cases; one of them was in eclampsia with a prolapsed cord. His second case was much like Dr. Bowen's first case reported this evening; the child was delivered alive and both mother and child recovered with no bad results. One of his cases was for placenta praevia, which constitutes increasingly an indication for section; the outlook is better from the fetal standpoint, podalic version losing so many babies. Dr. Fry had condemned caesarean section as a mode of delivery in eclampsia; it seemed to Dr. Willson that the chances of delivering a large child from an elderly primipara by the vaginal route quickly enough to be of benefit either to the mother or the child are so slender that such cases will fall among those in which caesarean section is indicated.

Dr. Fry said that he had done 25 caesarean sections with 23 recoveries; and he was far from decrying the merits of the operation. But in cases of prolapsed cord and in eclampsia, vaginal caesarean section will answer all purposes and should be preferred in most cases. Eclamptic women are not proper subjects for serious surgical operations, and Peterson's figures show that abdominal section is 10 per cent. more dangerous than the vaginal section.

Dr. E. L. Morgan called attention to the fact that caesarean section among savages is rather a common practice, as is also the use of the knee-chest position. Notwithstanding the common remark that labor is a physiologic function and performed easily and naturally among savage peoples, death in childbirth is far from unknown among such tribes.

Dr. Frischkorn asked if it is not the proper practice in cases of caesarean section for contracted pelvis to sterilize the woman at the same operation; is it not better to prevent the possibility of having to do a section again?

Dr. Fry said that it is his practice to submit this question to the husband and wife for decision.

Dr. Lochboehler said that in looking over the literature on rupture of the uterus after caesarean section, he had found that the general opinion is that the accident is apt to occur, but may be delayed to the third or fourth pregnancy after section. The accident is said to be due to faulty union of scar. Dr. Bowen was very fortunate to find such good union in his second case.

Dr. J. D. Thomas said in reference to Dr. Bowen's case with cardio-renal disease that he had seen this woman in consultation with Dr. Bowen, and must disagree with Dr. Fry's opinion that caesarean section was not necessary in this case. Every case

must be a law unto itself. It is true that many cases with serious heart lesions do safely go through labor; but Dr. Bowen's patient not only had a very bad heart, but she was also a primipara of some thirty odd years of age and she had nephritis with acute symptoms. It was therefore the opinion of those who had seen her that she could not safely withstand the exertion of labor. As to whether the abdominal or the vaginal route were the better operation in such cases, Dr. Thomas was not in a position to say. He was extremely glad to hear of the favorable outcome of this case in Dr. Bowen's hands.

Dr. Lowe said that he had given the anesthetic in the case reported by Dr. Bowen in which cardio-renal disease was the complication; the pulse before operation varied between 140 and 150 in rate; blood pressure stood at 138 mm. Ether stimulated the heart somewhat, the pulse dropping to 110 for a time. In a second case of caesarean section performed by Dr. Vaughan, the occasion for the operation being heart disease and threatening eclampsia, the patient did very well under ether. Nitrous oxid adds to the burden of the heart and increases cyanosis, hence it is contraindicated in such cases. As to the post-operative morbidity of these cases of caesarean section, the dispensary men see the patients after they have passed out of the hands of the surgeons and find them suffering from intestinal adhesions with the consequent distress. From this standpoint the operation may be done too often, and its effect upon the after life of the patient should be borne in mind. He had given the anesthetic in a number of cases of caesarean section; one of the most interesting had been that performed by Dr. Carr last year, being the fourth section for eclampsia done upon the same woman; she recovered without incident.

CYSTS OF THE LIVER.*

By D. S. Lamb, A. M., M. D., L. L. D.,

Washington, D. C.

I have here a number of specimens from the Army Medical Museum, showing cysts of the liver. The series includes the simple solitary cyst, the simple multilocular cyst, the echinococcus cyst, the gas bacillus cyst, and dilated bile ducts.

The first specimen is a simple solitary cyst, the size of a walnut, obtained by me at a *post mortem* examination on a woman aged 62, who died of general cancer in 1904; the cyst has a thick wall, and contained a clear watery fluid, and I think no doubt was congenital.

*Presented to the Medical Society April 8, 1914.

The next is a multilocular cyst, or as it is sometimes called, a cystic adenoma. Probably also congenital; has a distinct lining. Received from Dr. McCallum, late at Johns Hopkins Hospital. No history.

The next was brought to the Museum in 1879, by the late Dr. W. H. Triplett, and is also a multilocular specimen. It is about one-half of the entire liver, and is of the same character as the previous one. The cysts were examined by Dr. J. J. Woodward, then in charge of the Medical Section of the Museum; he found their contents were rich in albumen, and contained the Rindfleisch granule cells, and pavement epithelium. The case was a coroner's case, and no history could be obtained. The entire liver weighed about two pounds.

In 1902, Dr. H. L. E. Johnson sent the next specimen without history. A portion of a cirrhotic liver, with multilocular cysts in the connective tissue, having a definite lining, and each cyst contained a brownish mass of clotted blood.

The Museum also has a specimen received from Dr. J. W. Bovée; a liver weighing 84 ounces; studded with simple cysts, containing a clear serum and epithelium that had undergone fatty degeneration. The case was published in the *National Medical Review,* 1897, vi, page 224. It was shown to this Society. The patient was a white woman about 70 years old, who had had the tumor for some years. Her symptoms were asthmatic, worse at night, almost constant eructations of gas, cold extremities, heart hypertrophied, ascites, and scanty urine, that contained much albumen and many granular tube casts. The nodular edge of the liver was easily recognized, and suggested carcinoma. She died in August, 1896. The *post mortem* examination was made by Drs. J. A. Stoutenburg and Bovée.

The remaining specimens are shown for comparison with the previous ones. The first is one of gas bacillus cysts, received from the late Dr. James Carroll, in July, 1901. Caused by the bacillus aerogenes capsulatis.

The next is one of multilocular echinococcus cyst, received in 1901 from Dr. L. T. Le Wald, then of the Army Medical Corps, and was published in the *N. Y. University Bulletin Medical Sciences,* 1902, ii, page 64. A typical case. An aggregation of small cysts; the hepatic capsule covering them enormously thickened. The cysts had a membranous lining, laminated as seen in echinococcus cysts, but hooklets and scolices were not found. Some cirrhosis. The diagnosis was carcinoma.

The next specimen was brought by Dr. E. R. Hodge of the Museum, from Manila. It is an echinococcus cyst of the liver, with thick yellowish wall and creamy contents. The patient was a soldier who died of amebic dysentery.

The last specimen is one of dilated bile ducts, that simulate

cysts. In the recent state they contained yellowish watery contents. The patient, a soldier, died in 1865; besides an effusion in the cerebral ventricles, Peyer's patches and the mesenteric glands were enlarged, suggesting a case of typhoid fever; the biliary ducts of the right lobe of the liver, however, were all dilated, and the left lobe yellowish in color. There was evidently some obstruction of the right hepatic duct, but it was not discovered. Dr. Edwin Bentley, of the Medical Corps, U. S. A., now retired, sent the specimen to the Museum.

The cause of simple cyst of the liver has been much discussed. The general opinion is that it is due to dilatation of aberrant biliary ducts.

Dr. D. L. Borden was specially interested in the specimens of simple cyst of the liver, because he had had such a case last summer at the Columbia Hospital. [See *Va. Med. Semi-Monthly,* March 27, 1914.] A search of the literature would indicate that the condition is very rare; there are only 90 cases recorded, so far as he was able to ascertain, and of these most were found at autopsy and were unexpected. Nineteen per cent. of these cases had also cysts of the kidneys, which fact may have some bearing on the etiology. The symptoms of this form of liver disease are very obscure; usually there is nothing to call attention to the disease except the appearance of a tumor. In his own case there was a bulging tumor in the epigastrium; there was doubtful fluctuation on palpation. The diagnosis being in doubt, an exploratory laparotomy was done, which revealed a very large cyst of the liver, situated under the capsule of Glisson and pushing the diaphragm up and the liver down; at the operation 3,000 cc. of fluid were withdrawn from the cyst, and drainage from its cavity persisted for five weeks after the operation, when it ceased with complete recovery of the patient.

Dr. Lamb said that two of the cases exhibited by him had been published, but both occurred many years ago.

Coming to Herself.—On one occasion, Dr. Francis Warner, who is senior physician at the London Hospital, was trying to bring back to complete consciousness a woman who had had a paralytic stroke.

His efforts seemed likely to be in vain. For a long time her utterances were only the ravings of delirium, but all at once she sat up in bed and, looking straight at Dr. Warner, she cried out: "Oh, you funny old man?"

"Ah?" said Dr. Warner, cheerfully, "Now she's beginning to talk sense!"

FOOT-STRAIN; AN ANATOMICAL EXPLANATION WITH SUGGESTIONS FOR TREATMENT.*

By John Dunlop, B. S., M. D.,

Washington, D. C.

Among the ailments which fall within the province of the Orthopedist, those of the foot are most frequently brought to his attention, and, as there seems to be so much misunderstanding in the profession concerning the true mechanics of the foot, and the gradation from the normal to the abnormal, I shall take the time to present this side of a very interesting subject.

The spring of the year is the favorite time for the crop of foot troubles. Within the next few weeks you will see numerous cases, so I feel that the time is especially seasonable for this paper. I have used the word "strain" in my title because my understanding of *strain,* in contradistinction to *sprain,* is one, I may say, of degree. In the case of a strain, a ligament, tendon, or muscle has been stretched without any perceptible break in its fibers, while with a sprain, the fiber has been broken. Foot-strain, then, is where there is a stretching of the ligaments, tendons, or muscles of the foot.

Let us now observe the consequences. The proper working of a piece of machinery depends on its proper adjustment. So much more, therefore, does the proper working of such a complicated piece of machinery as the foot, depend on the proper adjustment of its parts. Since, then, the problem is reduced to one of mechanics, let us look closely into the anatomy of the foot, so far as it deals with the mechanics of foot action.

Lloyd Brown, in 1912, published a most comprehensive article on "the action of the extrinsic and intrinsic muscles of the foot, from an anatomical standpoint." To my mind, the key-note of the situation lies in the fact that the astragalus is morticed in between the internal and external condyles, and that there is no motion laterally, no matter how much flexion or extension of the true ankle joint. Any lateral play, therefore, of the internal malleolus is accompanied by a similar excursion of the body of the astragalus. How then, does this change in position of the internal malleolus take place, the os calcis being firmly fixed as in weight-bearing.

The calcaneo-astragaloid joint is dome shaped, facing downward and inward, and normally allows of a considerable degree of rotation; that is, the os calcis may be rotated *out* at this joint. If, now, the heel is fixed, outward rotation of the os calcis is impossible, but a similar result is obtained, by *inward* rotation of

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the astragalus on the os calcis. Now let us see just the effect on the foot. With the inward excursion of the internal malleolus, the entire inner edge of the foot is brought closer to the ground, including the astragalus, scaphoid, internal cuneiform and the base of the first metatarsal, the os calcis rotating on itself, and the upper inner border passing inward with the astragalus. The normal position of this inner edge of the foot, otherwise known as the longitudinal arch, is held *in situ* by the proper balancing of certain groups of muscles and ligaments. For convenience these may be divided into two groups: The extrinsic, having its origin in the bones of the leg; and the intrinsic, where both the origin and insertion are in the foot alone. The extrinsic may be divided into three groups:—First, that passing below and around the internal malleolus; second, that passing below and around the external malleolus; and third, that on the dorsum of the foot. In addition, there is the tendo Achillis, which, however, has little to do with the conditions under consideration.

Let us take up the first group, that passing back of the internal malleolus:—a. The tibialis posticus. b. The flexor longus digitorum. c. The flexor longus hallucis. The tibialis posticus passes back of the internal malleolus, and is attached to the inner surface of the scaphoid, and spreads out to the plantar surface of the foot. The flexor longus digitorum, passes in a groove near the tip of the sustentaculum tali, and is inserted in the phalanges of the four outer toes, while the flexor longus hallucis passes back of the malleolus and under the sustentaculum tali, and is inserted in the distal phalanx of the great toe, and slightly of the second toe. What then, is the action of these muscles? First, without weight-bearing, the tibialis posticus is a supinator with slight flexion, and slight adduction. The flexor longus digitorum and hallucis, not only plantar flex and supinate the foot, through their leverage on the sustentaculum tali, which is located just a little to the fore part of the calcaneum, but rotate the back of the calcaneum forward, inward, and downward. This, we shall see later on, is of considerable importance.

Now with weight-bearing, the toes and heel being fixed the force or pull of these tendons is applied to the malleolus and the sustentaculum tali, with the result that whatever motion takes place, occurs at the only point of possible motion, the astragalo-calcaneal joint, producing the rotation of the astragalus on the os calcis outward, just the opposite of what occurs in pronation; that is, the internal malleolus, astragalus, and the upper border of the calcaneum, pass through a lateral plane outward. In other words, a rotation outward of the upper surface of the calcaneum takes place, and on this Dr. Brown lays the greatest stress, in considering the proper restoration of balance.

The second group of muscles, is that passing around the exter-

nal malleolus. The peroneus longus, which is inserted in the first metatarsal having passed beneath the cuboid, acts without weight-bearing, as a flexor and slight pronator. The peroneus brevis is inserted into the fifth metatarsal, it is also a plantar flexor and pronator, without weight-bearing. Suppose now, the toes and heel are again fixed with weight-bearing, these muscles, through their action on the external malleolus, have a tendency to force the foot into pronation.

The third group comprises the dorsal muscles, four in number; the tibialis anticus, the extensor longus digitorum, the extensor longus hallucis, and the peroneus tertius, without relation to the other groups. All are dorsal flexors, and their action may be changed somewhat, should either the internal or external group be improperly balanced, or the balance changed. For instance, the tibialis anticus, in the presence of a varus foot, acts as a supinator, or has a tendency to increase the varus. If, however, the foot is in the position of valgus, it would act as a pronator, and have a tendency to increase the valgus.

Having considered the extrinsic muscles, let us now turn to the intrinsic which pass from the os calcis to the anterior tarsus, metatarsus or phalanges, the most important of which are the adductor hallucis and the flexor brevis hallucis, and accessories. The intrinsic muscles and ligaments are of the greatest importance in acting as bow-strings and in holding the bones of the foot in such relation as to allow of the greatest amount of action through the extrinsic muscles, before described.

With this understanding, then, of the muscular action let us investigate what happens to the foot, with abnormal muscular tension, or rather, with an incorrect use of the foot. Suppose for example, an individual walks, toeing out, the weight-bearing line which is normally or correctly, transmitted along a line from the middle of the astragalus to the outer side of the great toe, will be shifted in, and we shall see that this line crosses the inner line of the foot, at some point from the scaphoid forward to the phalanx. With this weight-bearing line changed, there is a falling of the inner edge of the foot, that is, the astragalus rotates inward at the astragalo-calcaneal joint. As the os calcis and the fore part of the foot are fixed, the other portions of the foot, following in this pronation, come nearer the ground, and are more prominent. This is especially so of the scaphoid, and the internal cuneiform, and as this bowing in takes place, the muscles about the internal malleolus are not only stretched, but put under a mechanical disadvantage, as their action under such circumstances is more against the internal malleolus, than the true normal action of the muscles. These factors tend to weaken these muscles and to destroy the normal muscular balance, which is

then further attacked by the normal pronators or muscles passing about the external malleolus.

It might be well at this point, to explain the terms *pronation* and *valgus*. Pronation, is where the foot as a whole is rotated in at the calcaneo-astragaloid joint, with the inner edge of the foot preserved. Valgus, is an outward deviation of the fore part of the foot at the astragalo-scaphoid, or medio-tarsal joint. Both may be, and frequently are, present in the same individual, where there is a disturbance of the muscular balance.

Osgood divides the causes of foot-strain into extrinsic and intrinsic. The extrinsic, which may be caused by,—increase of weight, change of occupation demanding more hours on the feet, and debility from chronic illness, and nerve over-tire. The intrinsic causes are:—"the stretching of the ligaments which support the arches, and the ensuing gradual bony changes, not as a result of some increase in the burden placed upon the structures, or the diminished constitutional resistance of the individual, but due to faulty attitudes, improper gaits, a lack of proper muscle balance, and deforming shoes." The normal foot, then, is so moulded that it contains two arches, the longitudinal, and the transverse. The longitudinal is made up by the os calcis, astragalus, tarsal and metatarsal bones. The transverse arch is composed of all five metatarsals, the distal ends of the first and fifth being the only ones normally to come in contact with the ground in weight-bearing. The longitudinal arch, as I have just said, is controlled by the extrinsic and intrinsic muscles, the transverse arch, by the intrinsic muscles alone.

With the etiological factors so briefly stated, let us turn to the examination, for as Osgood states, the history and general physical examination are of the greatest importance in determining the extrinsic causes, and next in importance, probably, is an examination of the shoe worn by the individual; not the new shoe, or dress shoe, which is so frequently put on to visit the doctor, but the every-day shoe, which has been worn for a generous period of time. Of special interest about the shoe would be the inner point of the heel; if worn, it would indicate a pronation or excursion of the weight-bearing line toward the inner edge of the foot. The misshapen shoe, with a bulging of the inner edge about the region of the shank, indicates a prominent scaphoid. A sole worn through on the inner edge, means more weight thrown on that portion, or as we should find in valgus, or eversion of the fore part of the foot at the medio-tarsal joint. All of these points should be observed before we actually make an examination of the foot proper. We then observe the foot relaxed, its general shape, the condition of the circulation, and especially the contour of the longitudinal arch, and the flexibility, *i. e.*, the ability to obtain the normal movements actively and passively. Next we

observe the foot with weight-bearing, that is, with the patient standing, and also walking. Osgood lays special stress upon an accurate determination of the relation of strength between the abductor and the adductor groups of muscles, especially in planning treatment, and in accuracy of prognosis. The points of localized pain are of value in determining affected parts. For instance, when the calcaneo-scaphoid ligament is painful, we know that we are dealing with pronation. When the plantar structures are painful, we know that the longitudinal arch is under strain. One of the most helpful landmarks, is the callous formation under the ball of the foot, which invariably means internal pressure at that point. Such internal pressure can only be produced by a lowering of the metatarsal heads, as we find in the strain of the transverse arch.

For the treatment I shall only state principles, the details of which are as numerous perhaps, as the men doing the work. First to be considered is a correct shoe, and a correct shoe is one which allows the foot to assume the normal correct shape in weight-bearing, without undue pressure, as is assumed by the naked foot. Frequently, we are unable to prevail upon our patients to wear correct shoes all of the time, but if they would do so during the hours when they are most on their feet, a great deal would be accomplished, the dress shoe causing so much less trouble if worn as such. The most important part of the treatment is a correction of balance, and this is essential if we are to hope for a cure, for the constant strain must be taken away from the tendons and ligaments, before it is possible for them to assume their normal state. There are numerous ways in which this may be done, each condition calling for its own special line of treatment. Also of great importance, is the restoration of the muscle tone, or muscle balance, to its normal condition, to hold the corrected position. This can only be done by such methods as exercises, massage, etc. In considering treatment for the individual case, we must take into account, first, the social condition of the patient. If he be a wage earner, we shall find a willing helper to restore the foot to its best conditions. For example, he will gladly wear a proper shoe, and he will diligently carry out instructions as to the restoration of muscle tone by exercises, etc. On the other hand, in dealing with a society woman, we find that treatment has to be planned so as to conform to certain styles in foot wear, and also with her social engagements. Comfort is frequently the only point desired, and the consequences then take care of themselves.

I cannot close without a protest against the use of a steel plate for the relief of pain. A steel plate to restore balance, until the muscles have so regained their tone that it is no longer necessary, is one thing, but the steel plate to relieve pain with no other

treatment is extremely dangerous. How many appreciate that by the use of such a plate, we are removing just that much more the possibility of movement of the foot muscles, and the longer it is worn, the more complete the atrophy becomes, and the more useless the foot. I have seen individuals come to my office, ill-advisedly wearing plates where this lack of muscle was so pronounced that they could not stand up without them. Let us then help to restore the proper muscle tone to such persons, and not be instrumental in the continuance of their infirmity.

THE VALUE OF THE BIRTH CERTIFICATE.*

By Llewellin Eliot, A. M., M. D.,

Washington, D. C.

In the majority of the States, laws have been enacted and are enforced requiring the registration of all births. Some States allow a small fee, twenty cents, for each of these certificates. This registration applies to illegitimate births, as well as to those occurring in wedlock, but a provision exists which shields the parties in the illegitimate case, to the extent, that in no way shall the identities of the parties be revealed on these certificates. This provision may be a wise one, probably it is not, in that it protects the guilty at the sacrifice of the child in its legal bearings.

Aside from a medical standpoint and as an aid to Census statistics, very few physicians ever give a thought to the importance of the little piece of writing filed away in the records of a Health Department.

To attempt to successfully deny that some births of today are not reported, would be futile, and it would be absolutely ridiculous to suppose things were better many years ago; these lapses from the law are not instances of criminality, pure and simple, they must be placed to the credit of the careless methods of some physicians.

Whether what I say should be placed in the class of sociology, medical economics, or legal medicine I make no effort to determine; the facts are presented for your careful consideration and guidance.

Our Health Officer has said very recently: "Reporting the name of the infant by the parent forms a valuable part of the record; it leaves no doubt in later years as to whether or not the record sought applies to the person in question; it enables the issuance of a correct certificate in connection with the child labor

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law, in settlement of estates, in judicial contests to litigate a claim. These are some of the reasons why all births should be reported and the names of the newly born promptly given."

The State of New York requires a copy of the birth certificate before a child is admitted to the public schools; the Military Academy at West Point also requires a birth record.

In the *New York American,* under date of March 22, 1914, was published a special cablegram giving the details of a hunt for a copy of a marriage certificate; this certificate was needed in connection with legal proceedings to establish a charge of bigamy. The search required a journey of some 24,000 miles. In addition to a copy of the certificate of marriage, which took place in 1904, a certificate of the birth of a daughter was found bearing the date of February 26, 1906. Subsequently to the birth of the child, the husband married again, and in 1911 he told the first wife there had been no real marriage between them; further, that she had no proof of it, since she did not have the certificate. This was true, as he had taken the certificate and through his influence with the Foreign Office had prevented her obtaining a copy. Eventually she was successful in her applications and returned to her home with all the evidence necessary to a prosecution of the bigamous husband. Here was an instance of the value of the little piece of paper filed away in the official records.

The case, however, which I wish to present has many features which cannot be corrected; briefly it is: On March 10, 1874, a party of Bohemians were celebrating. Upon a dare two of them were married. The conveyance was stopped at the house of a circuit rider; the time was half-past eleven o'clock at night. The rider refused to perform the ceremony, as there was no license. After much persuasion and cajoling he was induced, upon promise of procuring the necessary license in the morning, to comply with their wishes. The parties went to their respective homes and kept the marriage a secret; they did, however, meet at some of the hotels as occasion demanded. Now, the husband had a very intimate friend; in time, about June, he and the wife eloped. Things went on very well with these two until the woman showed her pregnancy, therefore the friend cast her away. The wife, repudiated by her husband and deserted by the other man, lived as best she could. Her confinement took place February 12, 1875, a girl baby being born. No certificate of the birth was made.

The mother took her baby and went into the country, where she afterwards died. The husband, although the presumptive father, was not in reality the father, but saw the child provided for, under the character of a relative of the dead mother.

Two years elapsed from the death of the mother; the wronged husband sought the other man and after a short but convincing

argument, they both prepared for the inevitable; in the pistol duel the other man was killed, the husband escaped and to this day has never been apprehended.

The husband never spoke of his ill-fated marriage until recently, but during all the years that have passed he has kept in touch with the daughter of his wife and will after his death proclaim his connection with the mother in his will.

No law court can establish the parentage of the daughter, but the certificate of the physician would have made everything clear.

The minister who performed the ceremony is dead; for fear of legal prosecution he was afraid to cause any investigation into the case; the witnesses, all except one, are dead; the mother is dead; the best friend was killed in accordance with the unwritten law of men; the woman is totally ignorant of her parentage; she is happily married; and I have often but without success begged the man to reveal his supposed identity in the matter of parentage. He contends it was not his child, therefore, he should not at this late day make any such claim, but will right everything before he passes away.

In concluding, I wish with all my power to urge upon physicians, midwives, and others, upon whom the responsibility may be placed, to promptly report every birth with which they are connected; and I think further, the plan of publishing in the daily press a notice of births is a most commendable one. I believe many birth records might be gathered were the Health Officer permitted to send a representative among the physicians at stated periods, seeking through friendly visits to prevent any violation of the law requiring return of births.

Dr. Roy said that the value of the birth certificate becomes very small to the child when the names of the parents are omitted because of illegitimacy; and perhaps the certificate is a disadvantage if the names of the parents are fictitious for the same reason. Is there any law anywhere which compels giving the correct names of the parents of illegitimate children?

Dr. Lochboehler said that there is not only no law in this community requiring the insertion of the correct names of the parents of illegitimate children, but the local health office advises the omission of the names of the parents in such cases.

Dr. S. S. Adams heartily agreed with the plea for more accurate recording of births; there is often the very greatest difficulty in positively establishing the parentage of children. He called attention to a case of recent occurrence in which a French maid sued a very prominent man to compel him to recognize his parentage of her child. It was afterwards shown that this woman had sought to fix the responsibility for fathering this child upon three different men. It seemed to him that few physicians will inten-

tionally fail to report births occurring in their practices; but very often the forwarding of the certificate is omitted because of the lack of system with which so many older physicians conduct their work. The young physicians of today are apt to be more systematic.

Dr. Lemon said that the wording of the birth certificate in use here protects the physician from any consequences growing out of information contained therein, because the certificate itself requires the inclusion of the name of the person from whom the information is obtained.

Dr. Williams said that so far as he knew this is the only country in which the onus of informing the authorities of these matters of vital statistics and record is put upon physicians, not only without compensation but with penalties for non-performance. These matters are purely legal affairs; moreover, putting the onus upon the physician is not productive of complete returns because not all births come under the notice of physicians.

Dr. A. B. Hooe expressed the opinion that it would be very dangerous to put statements as to the parentage of illegitimate children upon the birth certificate.

Dr. Davidson said that the statute making the report of births obligatory expressly protects the physician from any attack growing out of his statements made in good faith in the certificate. [He read from the statute.]

Dr. Chappell said that the form of certificate used in this District is responsible for some failures to make the return because of the great number of items of information called for. Certain of these items are forgotten and the certificate must wait until a subsequent visit to the mother of the child, and thus the whole matter passes out of mind.

Dr. Lowe said that the student of today is taught to carry the birth certificate in his grip and to make it out at the time of delivery; there should be no trouble if this plan were universally adopted.

Dr. Roy said that if the local law exempts one from reporting the names of the parents of illegitimate children, it is a very poor law because it deprives these unfortunate children of a name. By withholding the name we perpetuate the misfortune of these already unfortunate children. He had been talking with Mrs. Kate Waller Barrett upon this subject and she advocates the early assumption by all illegitimate children of a surname.

Dr. D. G. Lewis inquired what all the discussion was about. It appeared to him that all that physicians had to do was to obey the law.

Dr. Eliot said that if we may omit the names of the parents of illegitimate children we may as well omit the names of the parents of legitimate children. Every child is entitled to a full cer-

tificate of birth, even if it costs the exposure of wrong doers. He advocated the payment by the State of fees for the reports required of physicians.

DR. J. B. MURFREE'S CASE OF LITHOPAEDION.*

By D. S. Lamb, A. M., M. D., LL.D.,

Washington, D. C.

This lithopaedion consists of a human fetus at about the eighth month; an irregular, oval, yellowish mass, 6.5 by 5 inches in diameter, weight 21 ounces; showing at its surface several cranial bones and the bones of one arm and one leg, hand and foot. The bones are covered with a thick calcareous crust, that probably represents the membranes. A number of cavities in the mass.

This specimen was presented to the Army Medical Museum by Dr. J. B. Murfree of Murfreesboro, Tenn., and the case was published in the *Trans. Tenn. Med. Society,* 1886–8, page 85. It is shown to this Society because of the rarity of the condition.

The history is that the woman's first pregnancy was apparently normal until the end of the eighth month, when she had a severe dysentery, during which labor pains began, she had a vaginal hemorrhage for several days, and fetal movement ceased. The labor pains finally ceased and for two weeks she had a vaginal discharge containing "lumps." The dysentery subsided, but left her with a marked tenderness over the entire abdomen, and she could not lie down with comfort; became weak and anemic. After a long time the symptoms subsided and she regained her health and strength but could feel the tumor which gave some mechanical inconvenience. Her health continued good for 54 years, during which she bore five children and led an active and industrious life. Died at 78 years and the mass was removed *post mortem.* It lay on the brim of the pelvis, at the left of the median line, enclosed in a cyst attached to the intestine and abdominal wall. Its relation to the internal genital organs could not be made out.

[Dr. Lamb also showed a mummified fetus of a calf. The cow conceived when two years old; gave milk for awhile, became fat and was in good health for five years; she was then slaughtered for food and the calf was found "in the uterus, which in some way had closed around it." Probably an extra uterine pregnancy.]

*Reported to the Medical Society April 22, 1914.

Dr. J. B. Murfree's Case of Lithopaedion.

Dr. Bovée was specially interested in one of Dr. Lamb's specimens because of the very long period during which the woman had carried the mass in the abdomen. He reported a case of a full term abdominal pregnancy, the fetus having been removed by operation nine years after its formation, the mother having meanwhile borne a child. The literature contains a number of cases in which lithopedions have been carried over fifty years. The subject is an entrancing study; all the old writers thought that the fetus in some way escaped from the uterus and their histories of the cases always recount some accident to the mother to account for the anomaly.

MALIGNANT INTRA-OCULAR TUMORS.*

By C. R. Dufour, Phar. D., M. D.,

Washington, D. C.

There sometimes occur other malignant intraocular tumors than sarcoma and glioma, but as these are the most frequent we come in contact with, I shall only discuss them. Sarcoma of the iris and ciliary body are similar in character to that of the choroid, so that what I say in regard to the choroidal tumors will practically apply to those of the iris and ciliary region.

Sarcoma of the choroid is the chief malignant intraocular tumor occurring in adult life, in contrast to glioma retinæ, which is found in very young children, and which I think is sometimes congenital.

Choroidal sarcoma is a disease of adult life, from 18 years up to 60 or more. It is always primary, single, and almost always pigmented. There is a white variety, but it is more rare than the pigmented. The frequency of its occurrence is estimated by Dr. Hill Griffith of the Royal Eye Hospital, Manchester, England, who saw forty cases in over a hundred thousand eye cases, as .03. Dr. Freudenthal gives .04, Dr. Fuchs, .06. It occurs about 15 to 25 per cent. oftener in males than in females. As to its etiology, little is known. Injuries do not cause it. Those in whom it occurs are usually in fairly good health. It usually begins in the larger vessels, and extends by means of the vascular channels. The lymph glands do not seem to be affected. It arises by a broad base from the choroid and appears as a round knob-like prominence, growing usually toward the anterior part of the eye. It is composed almost entirely of pigmented cells, which are mostly long or short spindles with a single nucleus, often arranged in a whorled manner around the vessels. As the growth enlarges the

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retina is pushed before it. The different stages of this disease are four in number. In the first the tumor is small, the tension normal or subnormal, there is no inflammation, and the media are clear. This stage may last from six to twelve months, sometimes longer. At this period the patient may have noticed a defect in his vision, a dark spot, which is a scotoma and corresponds to the location of the tumor, in its effect on the visual field. An ophthalmoscopic examination at this time will probably reveal a rounded opaque prominence, with vessels coursing over it; the retina may still be smooth, not having been detached by the pressure of the growth. After a while the detachment becomes total, the eye inflamed, and blind, the tension elevated, which is the second stage.

In this stage the tumor is growing larger, the cornea dull, the anterior chamber shallow, the pupil dilated, the whole condition of the eye simulating chronic inflammatory glaucoma. If the media remain clear the eye ground can be examined by the ophthalmoscope. Often the media and lens become cloudy, which fact together with the elevated tension is liable to cause a mistaken diagnosis of glaucoma with cataract to be made. It is of great importance to make an accurate diagnosis, to differentiate between an intraocular tumor and a glaucoma, for an iridectomy is just as strongly indicated in glaucoma as it is contraindicated in sarcoma. In glaucoma, if the operation is performed in time, the sight will probably be restored, and the disease checked in its progress, while in sarcoma the condition would be made worse by delaying the enucleation, and it would be very prone to hasten a fatal issue by giving rise to infection of neighboring tissues. Information from the patient may be elicited when the glaucoma is secondary to an intraocular tumor, that the sight was lost for some time before the eye became inflamed, and that the usual symptoms of glaucoma, viz., transient attacks of pain, dimness of vision, colored rings around the light, coming on at night and disappearing after sleep, have not been present; also that there has been no remission of the symptoms, such as occurs in glaucoma. If sufficient vision remains to take the visual field, the retention of the nasal side would argue against glaucoma, as that part of the field is the first to go in that disease. Notwithstanding all the skill and care, cases are reported where good oculists have removed glaucomatous eyes, which were thought to be sarcomatous, and iridectomy has been performed on eyes with sarcoma. It seems from this that this mistake cannot altogether be avoided. Sometimes there is an accumulation of fluid between the choroid and retina, due to a disturbance of circulation in the choroid, caused by the presence of the tumor, which causes a larger detachment of the retina than the area occupied by the growth, which fact prevents it being seen through said detachment and fluid.

The tension in simple detachment of the retina is usually early diminished. In a tumor it is at first normal, then increased.

If we should find a retinal detachment in a person whose eye had not been injured or who had not a high degree of myopia, the fundus of the eye must be very carefully examined from time to time, in order to ascertain whether there is only a simple detachment of the retina, or a detachment caused by a tumor.

Dilatation of the anterior ciliary veins is an additional argument for the presence of an intraocular tumor, the cause of which is that the blood in the uvea is prevented from flowing out through the vasa vorticosa, and thereby has to make its exit through the anterior ciliary veins, which fact causes them to dilate. There are two methods used, together with those mentioned, which materially aid, and render the diagnosis of intraocular tumor about as certain as it can be made. I refer to transillumination and puncture. The transilluminator is a portable electric light to which is attached a conical glass rod; the light is transmitted to the tip, through which it emerges. In a darkened room the tip of the transilluminator is placed on the sclera; in a normal eye the pupil will glow with a red light. If there should be a dark pigmented tumor in the interior of the eye, the pupil will remain dark, when the sclera is illuminated from that side. The operation of puncture is performed with a fine needle. The eyeball is cocainized with a few drops of a 4 per cent. solution, the needle is then passed through the sclera about where the tumor is located. If there is a tumor and the needle penetrates it, the needle will not be freely movable as it would be if it were in the vitreous or sub-retinal fluid. Should there still be doubt as to the presence of a tumor, the eye being blind, and painful, *I would unconditionally advise an enucleation.* As before mentioned the pain is caused by the increase of tension; this increase is not due to the tumor occupying a certain space in the eye, that can be compensated for by a decrease of vitreous. The engorgement which the tumor produces in the veins of the choroid causes an increased transudation of fluid in the interior of the eye which is followed by elevated tension. From this fact it will be seen that small tumors may cause elevated tension, or a large one may not, just in proportion to the increase of transudation of fluid in the eye.

The third stage is reached when the tumor breaks through the eyeball, and continues to grow outside. It may break through the eyeball anteriorly; in such event, dark hard prominences will be seen in the circumference of the cornea. In this case the diagnosis is easily made. Should it break through the eyeball, posteriorly, the diagnosis is not so easily made, as no evidence of the tumor will be visible, until the nodules growing posteriorly push the eyeball forward and cause an exophthalmos. The pain

as a rule abates or ceases entirely after the eye ruptures, because of the lessened tension. As soon as the tumor is freed from the intraocular pressure it grows very rapidly, soon filling the orbit, growing beyond and becoming very large, a mass as large as a good sized orange. It ulcerates, which causes frequent hemorrhages. It grows backwards to the brain and the fourth stage is reached when metastatic nodules develop in the internal organs, most frequently in the liver. Sometimes hemorrhage of the retina is followed by glaucoma, and if the clot is large there will be increased tension; there will be a large pigmented mass in the eye, all of which might lead to a wrong diagnosis, of intraocular tumor. The chief cause of death is the metastasis to other organs; this usually occurs from two to three years after enucleation. A few of the reports as to the frequency of death I will repeat. Dr. Martin reports 62 per cent. in 35 cases, Langford and Collins 50 per cent. in 79 cases, Freudenthal 37 per cent. in 24 cases, and Fuchs 23 per cent. in 17 cases. Dr. Griffith of England says that 50 per cent. may be reckoned as permanent cures. I think it is generally conceded that the stage at which the eye is enucleated has little if anything to do with the metastasis. As to the prognosis from the histological character of the growths, I believe the round-celled, vascular ones are more malignant than the spindle-celled and less vascular. The young recover better than the old, the average age of recovery is 38 years, the fatal cases 52. If a recurrence of the nodules takes place in the orbit, after enucleation, it must be entirely exenterated, the orbital periosteum removed and the bony walls curetted. The cavity is then packed aseptically and treated until well. The nodules are not likely to attack the bony walls or spread to the cranial cavity after exenteration. I report the two cases I have seen in the last few years:

Mr. G., aged 55 years, consulted me about his eye; the right one had been gradually getting worse for several months, it was now beginning to pain. Upon examination the eye was found to be congested, the pupil dilated, the tension increased. The media were hazy, but I was able to make out a detachment of the retina, elevated and dark in color. The sight was about gone. The increased tension, the pain, the elevated detachment, his age and the general history, all pointed to an intraocular growth. I told him my opinion and advised immediate enucleation, to which he consented. It was found to be a melanotic sarcoma of the choroid, arising from the posterior part of the eye. I kept track of him until about two years ago. Since that time I have not heard from him, and do not know if he is still living.

Case 2.—C. H., a young man aged 20 years, came from West Virginia. His left eye was sightless, had been getting that way for a year or more. He did not know what the trouble was, but waited until it was convenient for him to come to the city to

have it cured, as he said. The tension was increased, the pupil dilated, the iris was tremulous, the pupil was entirely filled with a greyish mass, which I thought was the retina that was pushed there by the tumor, which filled the eye. He was very much surprised when I advised immediate enucleation, and deferred it until he went home and consulted his parents. I advised that he make no delay, telling him the consequences that would surely arise if he did, that his chances for getting entirely well were a little more than even if he had the eye taken out immediately. He came back in about a week, the eye was enucleated, and a large sarcoma found in it, and as I suspected it had pushed the retina into the anterior chamber, completely filling it, and blocking the pupil. I heard from him several months ago; he was alive and well.

Glioma of the retina is a malignant intraocular tumor, which occurs in infancy and up to five years of age. It is often seen at such an early age that its beginning must have been prenatal.

Several children of the same family are often attacked, one after the other, so that the cause is attributed to some congenital vice of development. As a rule it attacks only one eye, though many cases are reported where it was bilateral.

Wardrop in 1809 gave the first good description of glioma. He had 17 cases which he called "fungus hæmatodes," of the malignancy of which he was aware. His statement that it grew from the retina was correct, as the works of Virchow and Von Graefe have proved that it springs from one of the granular layers of the retina. Cohnheim's theory is that an adventitious fetal development of the nerve fibers and ganglion cells results in the establishment of "rests;" from these the glioma grows. Treacher Collins says that glioma cells and those of the undifferentiated cells of a three months fœtus bear a close resemblance to each other, and it is more than probable that the developed tumor bears a direct relation to the halted development of the fœtal retina. Axenfeld is of the opinion that the glia and ganglion cells may be the outgrowth of the undifferentiated cells of the tumor. Fuchs is of the opinion that a congenital morbid disposition lies at the bottom of glioma, as shown by the case he reports. A mother brought her four-year-old son to the clinic, with a glioma of the right eye. She said that it had existed only one year, but it was quite far advanced. The eyeball was enlarged and the glioma was growing out from it into the orbit. The whole orbital contents were removed, but the child died six months afterwards with brain complications. Some months after, the mother brought her second child, two years of age, to the clinic. She said that he had been blind in the right eye since birth, although it had been but recently that the eye became larger than the other. This child had glioma, was operated upon and died a year afterwards. Soon after the mother brought her

last and only child, then only a few months old, fearful lest it had the same dread disease, because she had noticed the yellow reflex in the eye, which she had seen in the eyes of the other children. This child did not have a glioma but a congenital coloboma of the iris, downwards, as well as a coloboma of the choroid.

Glioma of the retina may develop under two forms, viz., as circumscribed and as diffuse. The former, which is found in most cases, grows from the retina as a tumor, may extend forward into the vitreous, and is known as glioma endophytum, or it may pass backwards into the subretinal space and is known as glioma exophytum. Either form may cause retinal detachment. Glioma has its different stages, similar to sarcoma of the choroid. In the first stage the inflammatory symptoms are absent, there is, however, a yellowish reflex to be seen in the eye, which is usually sightless. In the second stage the tension becomes elevated, the eye congested and painful, regressive metamorphoses occur, starting in the nucleus or in the protoplasm, or in both, causing nucleus death in the cells. These cells become necrotic, swell, and cannot be stained by hæmatoxylin. In the third stage the tumor grows out from the eye, which soon becomes transformed into a large bleeding mass, protruding way beyond the eye. Metastasis to the liver, brain and often other organs marks the fourth stage, and the child dies from exhaustion and the general effects of the disease. In some rare cases glioma exhibits another manner of growth. It grows at first like the type just mentioned. It undergoes regressive metamorphosis, and simulates an iridochoroiditis or chronic panophthalmitis. Degeneration takes place, the fluid parts of the eye may be absorbed and the eye shrinks in consequence of the inflammatory processes, causing it to resemble progressive bulbar atrophy, or bulbar phthisis oculi. After a while the disseminated patches in the choroid or optic nerve, or in both, begin to grow again, fill the eye, break through it, and ultimately cause the well known end. This condition is known as Crypto-glioma. Pseudo-glioma, called amaurotic cat's eye, because amaurotic means blind, and the eye shines like the cat's in the dark. This condition is an irido-choroiditis, and simulates a glioma, for there is a yellowish reflex in the eye, the sight is gone, the tension may be normal, subnormal or elevated. There may be pain. Care must be taken in making the diagnosis of pseudo-glioma, and we must not be too sure we have no malignant condition present, for no diagnostician, no matter how skillful, is able, at least for a certain period of time, to tell whether a seeming irido-choroiditis may not develop into a crypto-glioma. Some authorities say that pseudo-glioma is a diagnostic mistake, and that in the course of time as our knowledge increases, pseudo-glioma will become rarer. Prof. Schobel, of the University of

Prague, says crypto-gliomata are true gliomata which have not been, and as yet cannot be recognized in the early stages, the latter course of the affection and the anatomical examination alone revealing their true nature. Therefore they are such gliomata as run their course under the picture of a disease of a different nature, and thus lead to an incorrect diagnosis.

The course of this disease from its beginning to a fatal termination usually extends over several years. The treatment consists of an early removal of the eye; it must be removed before the tumor penetrates it and begins to grow outside. As long as the growth is confined to the eye, and an enucleation is done, the prognosis is fairly favorable. If the growth is already out of the eye, before it is seen by the surgeon, then a thorough exenteration of the orbital cavity must be done, after the eye is removed. In enucleating the eye, the optic nerve should be divided as far back as possible. In pseudo-glioma the eye should be enucleated, when there is elevated tension, and pain. The eye is sightless, and is a constant source of pain, so I think it is better out than in; the cosmetic effect of an artificial eye is certainly better than one that is chronically inflamed, of no use whatever, and which might eventually develop malignancy. *As soon as the diagnosis is made of malignant intraocular growth, the eye must be immediately removed.* I think there is no exception to this rule.

Case 1.—Child brought to me in 1910 by his father, who had noticed a peculiar appearance in the eye, and also that the eye was blind. The boy was healthy looking, was 3 years old. The eye was congested, the tension elevated, and there was a yellowish reflex in it, which could be seen by focal illumination. By means of the ophthalmoscope the tumor could be seen, in the posterior chamber, which it about filled; fine vessels were coursing over it. I told the father of the serious character of the disease and advised immediate enucleation. Though very loth to do so, he finally consented. The eye was removed and a section of it proved the growth to be a glioma.

Case 2.—A young boy was brought to the ophthalmological section of this society by Dr. Heitmuller. This boy was suffering very much from pain in his eye. The eye was examined by the members of the society. The tension was elevated, the eye congested, the media fairly clear. The boy's age was beyond that in which a glioma is usually found, being about eight years. There was no sight. By the opthalmoscope a small mass could be seen, with vessels coursing over it, but we could not satisfy ourselves whether it was a growth or not. It was concluded that owing to the fact that the eye was blind, that he was suffering such intense pain, so much so as to prevent him from sleeping, and it was beginning to tell on his nervous system, the eye should be removed. I enucleated the eye at Georgetown University

Hospital. A microscopical examination of the wet tissue revealed only inflammatory condition. A section was made, embedded in parafin, which was laid aside until it would be convenient for the pathologist to examine it. When he afterwards attempted to cut it, it was found to be of such bony hardness that it could not be cut. This was evidently an irido-choroiditis, plastic in character, simulating very closely a growth, and causing glaucomatous symptoms, and blindness. The enucleation was justifiable because nothing would ease the pain or restore the sight.

In the time allotted me for my paper, I can write but briefly on this important subject; much must necessarily be omitted which would be of interest. In concluding I will report a few cases which will show the fearful results of this terrible malady and say that this disease, though not frequent, is so terribly fatal that I would emphasize the importance of an early recognition of the trouble and the necessity of immediate removal of the eye, and would say to the general physician to always remember that such a condition may at any time be found in the eye or eyes of the babies that he attends. Examine the eyes as a routine, and by focal illumination, and especially in families where there has been malignant growths in the parents. Dr. Van Hoxman, Jr., reported a double case of glioma in mother and child. The mother had been operated on 28 years before for glioma. In the reports of the Royal London Eye Hospital, Dr. Owen reported a similar case. A woman operated on for glioma in infancy, married, bore a child which also had glioma, which was removed. A full sister to this mother bore two children who had glioma. He operated on a boy two years of age; this boy married at 21, his wife bore seven children, two of whom had glioma. The first was operated upon, but there was a recurrence. An operation was refused on the second; both children died.

At the ophthalmological section of the A. M. A. at Los Angeles, Cal., Dr. Macleisch reported a very pathetic case. A child of wealthy parents was brought to him, and in whose eye he discovered a glioma. He advised enucleation. Shortly after this a glioma was discovered in the other eye. The parents asked if nothing but the removal of the eye would cure her. When answered in the negative, they decided to take her abroad for consultation. Dr. Galiszowski, of Paris, confirmed the diagnosis. They then went to Lourdes, where they were at the time of this report. There is no doubt what the result will be, or has been, unless the eye was removed. This report was made in 1911. Dr. Arlt, of St. Louis, reported a case of glioma in a child brought to him. The parents consented to the enucleation, which was done. About a year afterwards they brought the second

child to him. He found a glioma in each eye. The parents were told that to save the life of the child both eyes must be removed. They refused, saying they would prefer to see the child die, which it did. Whenever they see the doctor they always say how sorry they were that they did not have the operation performed.

Dr. Savage reported two cases in which glioma was in both eyes. The eyes were removed and the children are well.

Dr. Woods, of Baltimore, reported a double case of glioma, which was operated upon, and the child was well at time of report.

Dr. Weeks, of New York, reported a case of sarcoma which demonstrates the difficulty of making a diagnosis. A man 24 years of age had, some year and a half ago, noticed a defect in his visual field. He consulted an oculist in Syracuse, who said he had a mass in the background of the eye. He also said that he must keep it under observation for a while, as he could not determine what it was. After a while he decided it was a sarcoma. He put the patient on mercury and iodide of potash to ascertain if there was syphilis. A Wassermann test was not made. In 1910 this patient was seen by Dr. Weeks, who found a brownish colored mass above the fovea, with an elevation of .5 mm. A Wassermann was done and tuberculin used, for the purpose of differentiation. The patient was under observation for three months, after which it was decided best to remove the eye, which was done, and the growth found to be a very small sarcoma. The doctor concludes by saying that he knows of no other case on record where the sarcoma was so small.

Dr. Thompson reported the most remarkable case of heredity on record. A little girl was brought to his office in 1903 with a glioma of the right eye. The mother writes the following description: "The first child affected with cancer was a boy born in 1869; died in 1871, no medical attendant; second child born in 1872; disease was noticed in 1873; the eye was removed in September, 1873, cancer came in other eye eleven months later, and the child died in 1875. The third child died from cancer in 1882. The fourth child born in 1883, died in 1887 from same disease. Fifth child born in 1888, disease noticed in 1890. It died in 1891. I am 55 years old, the mother of 14 children, 7 boys and 7 girls. I have lost no children but from cancer."

May I, in closing, be permitted to repeat and say that in the aggregate the cases are not many, and the diagnosis is easy, yet the general physician, probably not having seen a case, might be inclined to think it a cataract and advise delay. I would advise if in doubt, secure expert advice, and remember that early recognition of the disease and then *immediate enucleation* of the eye is the only method by which the life of the child can be saved.

Dr. Lochboehler said that an interesting feature of the paper was the reporting of such a large number of malignant tumors in such youthful subjects. Carcinoma is usually to be found only after the thirtieth or fortieth years. Another feature of interest was the great tendency to the formation of metastatic tumors. The youth of the patients attacked by these tumors redoubles the necessity for very early recognition of them.

Dr. O. Wilkinson wished to speak on one phase of the subject, namely, diagnosis by transillumination. The use of the antrum transilluminator in deep cases is invaluable; mere ocular transillumination does not reveal small, deep tumors. When the antrum illuminator is used in cases of deep intraocular tumors, the pupil will not light up.

Dr. Roy called attention to the fact that the cases reported were of sarcoma and not of carcinoma.

Dr. W. T. Davis congratulated Dr. Dufour upon his paper. He remembered Prof. Fuchs of Vienna remarking upon how long sarcomata may be watched developing in the eye; he had one case in which he had watched the development of a sarcoma in the eye for twelve or fifteen years, during which time there was imperceptible growth; then the tumor began to grow rapidly and the eye was enucleated. The congenital origin of such growths finds supporting argument in this ability to observe the beginnings of such tumors very early in life.

Dr. Dufour said that gliomata are to be found among children exclusively; sarcomata are apt to develop at about the eighteenth year or beyond. Gliomata are neurogliar in histology and behave like sarcomata. Any form of transillumination may be useful in such cases.

"THE WASHINGTON MEDICAL ANNALS."

Suggestions for the Improvement of "The Washington Medical Annals."

1. The Washington Medical Annals should be published monthly; two months is too long a time to elapse between issues. Members forget all about it and contributors become dissatisfied.

2. The number of reading pages should be increased at least one-half; this will give a journal of about 490 pages instead of 330 as at present.

3. Contributions from reputable physicians who are not members of the Medical Society should be invited.

4. The number of subscribers should be increased; there are, approximately, 1,200 physicians registered at the Health Office; we have only three subscribers, and a membership of about 550 active members.

5. The price of THE MEDICAL ANNALS should be raised to $2.00 a year until receipts justify a reduction in this rate.

6. The Editor should be given entire charge of the journal, selecting his associate editors, reviewers and other assistants.

7. The number of advertising pages should be unlimited; they should be open to drug men; surgical appliances, all reputable business houses having goods in which physicians are interested; this will include photograph houses, automobile agents, private ambulances, trained nurses, and so on.

8. There should be a regularly-appointed advertising solicitor paid a commission on his successful work.

9. Departments devoted to the interest of pharmacy, trained nursing, hospital notes, personal notes, health notes, college notes.

10. The Editor should be paid a salary of not less than $300 with an increased amount as receipts will justify.

(Signed) LLEWELLIN ELIOT.

March 30.

The Committee on Publication finds that the suggestions of Dr. Llewellin Eliot for the improvement of THE WASHINGTON MEDICAL ANNALS open the consideration of two alternative policies expressed in the following questions:

(1) Does the present publication adequately perform the function of setting forth the transactions of the Society for the purposes of record and for the information of the members, and if so, is the Society satisfied to continue the publication on this basis?

(2) Should THE ANNALS seek to enter the field of competitive medical journalism and endeavor to secure subscribers upon the basis of the value of its reading matter and to increase its advertising business upon the basis of its circulation?

The Committee believes that the publication fulfils the functions indicated in question (1), if this is all the Society desires. Dr. Eliot suggests that the journal should be published monthly. Upon this suggestion the Committee reports the opinion that the change would involve (a) an additional expense of about $75 per annum; (b) an awkward break in the continuity of publication, a new volume having just begun in January last and the beginning of monthly publication not being feasible until May; (c) a reduction of the average number of reading pages from 50 to 25, which reduction seems to the Committee to be undesirable. It may be said, on the other hand, that a monthly publication is more attractive to advertisers than one appearing bimonthly. It is possible for the Committee to enter into an advantageous contract for the solicitation of advertisers, and if it should appear that the journal can be made in this way more nearly self supporting, the

question of a monthly issue may be left for a future definite answer.

The Committee is disposed to answer question (2) in the negative. In the present status of medical journalism an attempt to compete with established journals would require a considerable initial capitalization and success would demand the undivided energies of a manager and editor working on a bread-and-butter basis.

Upon the proposition that the editor should be paid a salary the Committee has no recommendation to make. A majority of the Committee, without the concurrence of the chairman, desires to state that they view with favor the payment of an annual honorarium to the editor.

(Signed) D. S. Lamb,
H. C. Macatee,
H. H. Donnally.

In Memoriam.

ERNEST A. SELLHAUSEN.

Ernest A. Sellhausen, who died April 14, 1914, was born in this city May 12, 1853, and would therefore have been sixty-one years old had he lived another month. His early school days were spent at the old Gonzaga College, but when still very young he was sent by his father to the gymnasium at Bielefeld in Prussia, where he graduated, returning to Washington to study medicine at the Columbian College and taking his degree just before he had reached his twenty-first year.

Prior to entering upon the practice of his profession he again visited Europe and passed three years at Heidelberg, Leipzig and, finally, Vienna, devoting especial attention to the study of Pathological Anatomy.

It is interesting to note that, having been a student of Thiersch, he is said to have been the first physician in Washington to resort to skin grafting as a means of facilitating the healing of extensive and indolent granulating surfaces.

For many years he enjoyed a large practice, and was frequently in attendance upon the German, Austrian, Italian, Portuguese and Swiss legations. It was in recognition of his services as Military Surgeon to the Austrian Embassy for more than twenty-five years, and also as a token of sincere appreciation by the Ambassador, Baron Hengelmuller, that in 1912 he was invested with the insignia of the Order of Francis Joseph, by the Emperor of Austria.

Dr. Sellhausen was an earnest student of medical literature, often surprising his friends with his familiar knowledge of current French and German publications; he was moreover an excellent Latin and Greek scholar.

Above all, he was a man of sterling character, a loyal and devoted friend, and it is needless to say will be sadly missed by those who possessed the privilege of his intimate acquaintance.

Your Committee would therefore move the following:

*Be it resolved**, That in the death of Dr. Ernest A. Sellhausen this Society has lost an honored member, and

Be it further resolved, That a copy of this brief memoir and of the expressions of sympathy and regret of this body, be sent to his family.

JOHN VAN RENSSALAER,
FRANK LEECH,
GEORGE WYTHE COOK,
GEO. N. ACKER,
Committee.

PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Wednesday, April 1, 1914.—The Vice President, Dr. R. T. Holden, presided; about 75 members present.

The Treasurer reported for March, receipts, $68.00; disbursements, $133.13.

The Executive Committee reported as follows:

1st. Dr. J. H. Holland, who had tendered his resignation from membership, had been dropped in November, 1913, for nonpayment of dues; his dues, however, had been sent, and the committee recommended that they be accepted and the record of being dropped be rescinded. Adopted.

2d. The suggestions of Dr. Eliot for the improvement of THE ANNALS had been referred to the Committee on Publication, which Committee had reported, and the Executive Committee recommended the adoption of the report, and that no change be made at present in the policy of the Committee on Publication. Adopted.

3d. A letter of Dr. G. H. Simmons of the *Journal A. M. A.*, referred to the Executive Committee for action. The committee recommended that a reply be sent to Dr. Simmons, and indicated the form. Adopted.

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* Resolutions adopted by the Medical Society April 22, 1914.

An appropriation of $189.77 for publication of the March number of THE ANNALS was made.

Dr. S. S. Adams stated that at the Children's Hospital was a ward for tuberculous children and the hospital would receive indigent children from 2 to 12 years old, who had tuberculosis.

Dr. W. S. Bowen reported three cases of recent Cesarean Section. Discussed by Drs. I. S. Stone, A. B. Hooe, Fry, A. F. A. King, Prentiss Willson, E. L. Morgan, Lochboehler, J. D. Thomas, Frischkorn and Lowe. See page 236.

Dr. A. F. A. King read a paper on Kangri-burn cancer. See page 233.

Special Meeting Thursday, April 2.—Dr. G. Wythe Cook presided ; about 100 members present.

Dr. Gustave Monod, of Paris and Vichy, France, made an address on Post-Graduate Work in France, showing the resources of the French school for post-graduate work in medicine, and indicating the best way to gain access to the schools and hospitals. The address was illustrated with cinematographic films showing intestinal peristalsis, and men and birds in action. A rising vote of thanks was given.

Wednesday, April 8.—Dr. Holden, Vice President, presided ; about 70 members present.

An appropriation of $37.73 was made for expenses of Corresponding Secretary for March.

Letters were read from Surgeon General Braisted, U. S. Navy, and Surgeon General Blue, P. H. S., expressing appreciation of the privileges of the Society accorded to them.

A letter from Dr. Simmons of the *Journal A. M. A.* was read acknowledging receipt of that ordered by the Society to be sent to him.

The Executive Committee was instructed to buy a suitable view-box for exhibition of x-ray plates.

Dr. D. S. Lamb showed specimens of Cysts of liver. Discussed by Drs. D. L. Borden and Lamb. See page 242.

Dr. John Dunlop read a paper on Foot-strain ; an anatomical explanation, with suggestions for treatment. See page 245.

Dr. T. A. Williams reported a case of Syphilitic Multiple Sclerosis, diagnosed clinically despite the negative laboratory tests. Discussed by Drs. Hough, Hickling, Roy, W. T. Davis, Lawn Thompson and Williams.

Wednesday, April 15.—Dr. Holden presided ; about 60 members present.

An appropriation of $17 was made to pay for the use of the cinematographic apparatus at the last meeting.

The death of Dr. E. A. Sellhausen was announced and a committee, Drs. Van Renssalaer, Acker, G. Wythe Cook and Frank Leech, appointed to prepare a memorial.

Drs. A. W. Boswell and T. A. Williams reported a case of Word blindness, following fracture of skull.

Dr. L. Eliot read a note on the Value of the birth certificate. Discussed by Drs. Roy, Lochboehler, S. S. Adams, Lemon, Williams, A. B. Hooe, Davidson, Chappell, Lowe, D. G. Lewis and Eliot. See page 250.

Dr. Camp Stanley read a note on Mould recovered from the gastric contents. Discussed by Drs. W. T. Davis, Carr, Macatee and Stanley.

Wednesday, April 22.—Dr. Holden presided ; about 50 members present.

The Corresponding Secretary stated that he had received a letter from Surgeon General Gorgas, U. S. Army, expressing appreciation of the privilege of the Society extended to him.

The memorial committee on the death of Dr. Sellhausen reported. The report was adopted. See page 266.

Dr. G. T. Vaughan reported a case of Radical excision of tongue, and showed the patient.

Dr. D. S. Lamb showed a specimen of Lithopaedion. Discussed by Dr. Bovée. See page 254.

Dr. C. R. Dufour read the paper of the evening : Malignant intra-ocular tumors. Discussed by Drs. Lochboehler, Oscar Wilkinson, Roy, W. T. Davis and Dufour. See page 255.

Wednesday, April 29.—Dr. Holden presided ; about 85 members present.

Drs. Jack and George Magee reported a case of Ultra-acute hemorrhagic pancreatitis, and presented the patient. Discussed by Drs. Balloch and Weaver.

Dr. W. A. White read the paper of the evening : The moon myth in medicine. As this was under the auspices of the Medical History Club, Dr. Roy, the president of the club, presided jointly with Dr. Holden.

Need for Haste.—The Doctor—Mrs. Brown has sent for me to go and see her boy, and I must go at once.

His Wife—What is the matter with the boy ?

The Doctor—I don't know, but Mrs. Brown has a book on "What to do Before the Doctor Comes," and I must hurry up before she does it.—*Puck.*

WASHINGTON MEDICAL ANNALS.

Journal of the Medical Society of the District of Columbia.

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Editorial.

History of the Medical Society of the District of Columbia.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

The Washington Medical Annals, the official organ of the Medical Society of the District of Columbia, issued the first of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

Alumni Medical Society of Georgetown University. Active membership of 110; meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

Clinical Society.—Officers: D. W. Prentiss, President; F. L. Biscoe, Vice President; W. J. Mallory, Secretary-Treasurer; Censors: L. A. Johnson and J. D. Thomas.

Meeting place.	*Essayist and Date of meeting.*	*Discussion by.*
Dr. Wells	Dr. Clark	Dr. J. B. Nichols
The Rochambeau	October 12	
Dr. Barton	Dr. Mallory	Dr. W. E. Clark
1730 Conn. Av., N. W.	November 9	
Dr. Reichelderfer	Dr. J. D. Thomas	Dr. Hurtt
1721 Conn. Av., N. W.	December 14	

Clinico-Pathological Society.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership after 15 years. A limited honorary membership of eminent medical men. Meets on the first and third Tuesdays of the month from October to May, inclusive. Officers: President, B. L. Hardin; Vice Presidents, Thos. S. Lee and Wm. Earl Clark; Secretary and Treasurer, B. M. Randolph.

Freedmen's Hospital Medical Society. Meets on the second Wednesday of each month from October to May, inclusive. Composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

Galen Society of the District of Columbia.—Business meeting and President's address, Oct. 19, at Dr. Kearney's, 1229 O Street.

David W. Tastet, President; Carl Henning, Secretary.

Georgetown Clinical Society; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

Hippocrates Society, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year: L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

Medical History Club of Washington, D. C. Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H. W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig.

Medical and Surgical Society of the District of Columbia.—President, H. P. Parker; Vice President, D. P. Hickling; Secretary and Treasurer, L. Eliot; Recording Secretary, L. C. Ecker; Executive Council, A. R. Shands, O. A. M. McKimmie, L. Eliot, E. P. Copeland and L. H. Reichelderfer.

Society of Medical Jurisprudence, Washington, D. C.—President Dr. Wm. A. White; Vice President, R. Ross Perry; Secretary-Treasurer, Dr. D. P. Hickling. Meets on the second Monday of each month from October to June at University Club. Has from forty to fifty members.

Society of Ophthalmologists and Otologists, Washington, D. C.—Officers: President, J. J. Richardson; Vice President, L. S. Greene; Secy.-Treas., A. B. Bennett, Jr.

Membership.—Active Members: Drs. A. B. Bennett, Jr., J. H. Bryan, W. K. Butler, John W. Burke, Virginius Dabney, H. S. Dye, L. S. Greene, F. M. Chisolm, Carl Henning, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. P. Malone, W. B. Mason, M. E. Miller, S. B. Muncaster, Mead Moore, W. S. Newell, H. A. Polkinhorn, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive Members: Drs. W. N. Souter, C. W. Richardson, D. K. Shute, W. H. Wilmer, Wm. H. Fox.

Meetings are held on the third Friday in each month from October to May, inclusive.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

Walter Reed Medical Society meets on the fourth Thursday of every other month, from September to May inclusive. Composed of physicians located in the eastern part of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

Washington Society of Nervous and Mental Diseases. President, Tom. A. Williams; Vice President, W. M. Barton; Secretary, W. H. Hough. The Society has a limited member-

ship but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. Meets monthly on the third Thursday at the Cosmos Club or a member's residence.

WOMEN'S MEDICAL SOCIETY of the District of Columbia President, Sophie Nordhoff-Jung; Vice President, Ada R. Thomas; Secretary and Treasurer, A. Francis Foye; Corresponding Secretary, Margaret R. Stewart.

THE SECRETARIES of the other Medical Societies of this District are reminded that the ANNALS will publish the schedules of their meetings.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

THE 19TH INTERNATIONAL CONGRESS OF AMERICANISTS. Will meet in this city October 5 to 10, 1914. The meetings will be held at the new U. S. National Museum building under the auspices of the Smithsonian Institution, coöperating with other institutions and societies in this city. Drs. Frank Baker, G. M. Kober and J. D. Morgan are members of the Organizing Committee. Dr. Ales Hrdlicka of the National Museum is the Secretary. The membership fee is $5.00, and the Associate Membership fee $2.50, payable to the Treasurer, Clarence F. Norment, 1851 Wyoming Avenue, N. W.

CONSERVATION OF VISION, &c.—The Council on Health and Public Instruction of the A. M. A. has published and has for sale the following pamphlets, which may be obtained at the prices stated and from the office of the Association, Chicago:

1. School children's eyes; by Frank Allport.
2. Industrial and household accidents to the eye; by Harold Griffith.
3. Wearing glasses; by W. B. Lancaster.
4. Relation of illumination to visual efficiency; by E. M. Alger.
5. Trachoma in eastern Kentucky; by J. A. Stucky.
6. Auto-intoxication and the eye; by H. D. Burns.
7. Eye-strain; by Hiram Woods.
8. Lenses and refraction; by Frank Allport.
9. The eye and its functions; by Frank Allport.
10. Care of the eyes; by Frank Allport.
11. Child culture the function of organized medicine; by H. P. Favill.

12. Control of cancer; by J. C. Bloodgood.
13. Municipal regulation of milk supply; by E. O. Jordan.
14. Death and blindness from methyl or wood alcohol poisoning, with means of prevention; by C. A. Wood.

All the above are excellent, suitable for patients and others; the names of the authors are sufficient guarantees.

Embryological Study.—Drs. F. P. Mall, Professor of Anatomy, Johns Hopkins, and H. M. Evans, Research Associate, Carnegie Institution, make an appeal for human embryos. An appeal to physicians and surgeons to send such material as opportunity affords. So far over 800 specimens have been received, and on these more or less over 100 papers have been published. All material passed in abortions; if the embryo or fetus is not apparent, the tissue fragments may contain the ovum, and are desirable. Tubal pregnancies, if possible unruptured. Pregnancies *in situ* removed for malignant diseases or otherwise. Curettings before the menopause, if one or more periods have been passed. The specimen should as soon as possible be placed in 10 per cent. formalin and the bottle should be filled up to avoid shaking. Address either Dr. Mall or Dr. Evans, Johns Hopkins Medical School, Baltimore. If the contributor has not the conveniences, Dr. D. S. Lamb, of the Army Medical Museum, will undertake the care and transmission.

Laboratory for the study of the criminal, pauper and defective classes.—Dr. Arthur MacDonald of this city is still trying to get Congress to pass the bill, House Bill 7022, which has been reported favorably three times from the committee.

Registration of Physicians.—The examination of graduates of the medical colleges in this city, throughout the United States, for the year 1913, resulted as follows:

George Washington,	Examined 37,	Passed 35,	Failed 2
Georgetown,	35,	28,	7
Howard,	38,	35,	3

The New Dress of the Annals of Surgery.—Owing to the continually increasing amount of material of value, offering for publication in the Annals of Surgery, the publishers have found it necessary beginning with the July 1914 issue to enlarge the size of the page and also to somewhat reduce the size of type in which the original contributions have heretofore been printed. The enlarged size will also enable the publishers to make a better display of the illustrations which are such an important feature of the *Annals* contributions.

NECROLOGY.

Dr. Thomas B. Mohun, died June 28, at Providence Hospital, age 60. He was graduated in 1889 at the Medical Department of Columbian College, Washington, now the G. W. University. He was elected a member of the Medical Association of the District of Columbia, April 3, 1894, but was never a member of this Society.

Dr. Rupert Norton assistant Superintendent of Johns Hopkins Hospital died of typhoid fever, June 19. He was the son of the late Charles Eliot Norton, who was for years Professor of History of Art at Harvard University. Dr. Norton was a member of this Society from 1896 to 1900; served in the Spanish-American War. See the History of the Medical Society, page 358.

Maria Nellie Lovejoy died in this city, June 19. She was a daughter of the late Dr. J. W. H. Lovejoy of this city, whose sketch will be found on page 249 of the History.

RECENT PUBLICATIONS BY PHYSICIANS OF THE DISTRICT OF COLUMBIA.

J. F. Anderson, P. H. S.; The Infectious diseases; Reprint 179, Public Health Reports, April 3, 1914; Also, Some unhealthy tendencies in therapeutics; *Jour. A. M. A.*, July 4, page 1.

Bacteriological standards for milk; reprint 192 from Public Health Reports, May 15, 1914.

C. N. Chipman; Recent methods in hospital anesthesia; *Kentucky Med. Jour.*, June 1, page 339.

A. C. Christie, U. S. A.; A manual of x-ray technic, illustrated, Philadelphia and London, J. B. Lippincott Co., 1913, 104 pages, 8vo; cloth, price $2.00.

C. R. Dufour; Malignant intraocular tumors; *Charlotte Med. Jour.*, May. See also this number of the ANNALS, page 255.

H. R. Elliott; A case of infantile uterus and appendages, with result of treatment; *Jour. A. M. A.*, April 4, page 1085.

V. E. Emmel; Cytologic characteristics of erythroblasts in pig embryo; origin of non-nucleated erythrocytes by cytoplasmic constriction; *Amer. Jour. Anat.*, May 15.

J. A. Ferrell; Hookworm disease, its ravages, prevention and cure; *Jour. A. M. A.*, June 20, page 1937.

H. G. Fuller; Therapeutic value of salvarsan in luetic disturbances; *Va. Med. Semi-Mo.*, June 26, page 147.

Joseph Goldberger, P. H. S.; Typhus fever; Reprint 187 from Public Health Reports, May 1, 1914.

W. C. Gorgas, U. S. A.; Recommendations as to sanitation concerning employees of the mines on the Rand, made to the

Transvaal Chamber of Commerce; *Jour. A. M. A.*, June 13, page 1855.

W. H. Hough; Intraspinous injection of salvarsanized serum in the treatment of syphilis of the nervous system, including tabes and paresis; *Jour. A. M. A.*, Jan. 17, page 183; abstracted in *Old Dom. Jour. Med. and Surg.*, May, page 272.

A. Kemble; Chronic prostatitis; *Medical Record, N. Y.*, May 16.

H. H. Kerr; Arterio-venous anastomosis for diabetic gangrene; *Va. Med. Semi-Mo.*, June 12, page 126.

A. H. Kimball; Voluntary displacement of the eye; *Jour. A. M. A.*, April 4, page 1085.

A. F. A. King; An appeal to cancer research institutions; *Vermont Med. Mo.*, May 15, page 109.

L. Kolipinski; Note on the administration of digitalic acid, the acid resin of digitalis purpurea; *Mo. Cyclop. and Med. Bull.*, May, page 289.

J. R. McKean; The use of the Government medical services in raising the standard of medical education; Reprint from the Quarterly of the Federation of State Medical Boards of the United States, April.

W. J. Mallory; Gastric hypertony and gastro-enterostomy; *Jour. A. M. A.*, June 13, page 1883.

C. D. Marsh; Supposed poisonous properties of chestnuts grown on trees affected with chestnut blight; *Jour. A. M. A.*, July 4, page 30.

Med. and Surg. Society, D. C.; Proceedings; *Va. Med. Semi-Mo.*, June 12, page 127 and June 26, page 149.

T. C. Merrill; Chestnut Toxaemia; *Jour. A. M. A.*, Jan. 24; abstracted in *Kentucky Med. Jour.*, June 1, page 363,

M. G. Motter and M. I. Wilbert, P. H. S.; Digest of comments on the Pharmacopoeia of the U. S. America, and on the National Formulary for 1912; Hygienic Laboratory Bull. 93, April.

J. W. Weinzire and E. B. Newton; Bacteriologic methods for meat analysis; also Bacteriological analysis of Hamburger steak with reference to sanitary standards; *Amer. Jour. Pub. Health*, May.

E. E. Persons, U. S. A.; Field service regulations, U. S. Army, 1914, and organization tables, U. S. A., 1914; *Military Surgeon*, May.

C. A. Pfender; Brass poisoning; *Jour. A. M. A.*, Jan. 24; abstracted in *Kentucky Med. Jour.*, June 1, page 364.

B. M. Randolph; A case of apoplexy observed from the onset; *Old Dom. Jour. Med. and Surg.*, May, page 241.

E. W. Reisinger; Case of tuberculosis with negative sputum; *Va. Med. Semi-Mo.*, June 26, page 146.

L. A. Rogers, W. M. Clark and B. J. Wavis; Colon group of bacteria; *Jour. Infect. Dis.*, May.

J. W. Schereschewsky ; Diphtheria, its prevention and control ; Supplement, No. 14, Public Health Reports, April 17.

R. Y. Sullivan ; Pregnancy and labor complicated by carcinoma of the cervix uteri ; *Jour. A. M. A.*, May 30, page 1715.

M. I. Wilbert, P. H. S. ; Pure drugs and the public health ; Reprint 189 from Public Health Reports, May 8, 1914.

T. A. Williams ; Common errors in neurologic diagnosis and treatment ; *West Va. Med. Jour.*, May. Also *Mo. Cyclop. and Med. Bull.*, June, page 349.

PERSONAL NOTES.

Dr. S. S. Adams was rëelected Secretary of the American Pediatric Society at the annual meeting at Stockbridge, Mass., May 25 to 27.

Dr. J. W. Bovée was elected Treasurer of the American Gynecological Society at the annual meeting at Boston, May 19 to 21. Dr. Bovée has resigned from the Medical Reserve Corps, U. S. Navy.

Dr. W. P. Carr was elected President, Dr. J. D. Thomas Vice President, Dr. T. A. Groover, Recording Secretary and Dr. J. D. Rogers, Corresponding Secretary, of the Medical Society of Northeast Virginia and the District of Columbia, at the meeting at Manassas, Va., May 20.

Dr. L. C. Ecker was married at Northport, Long Island, to Miss Marguerite Fitch Wells, of Brooklyn, N. Y., June 16.

Dr. J. M. Cabell, Captain Medical Corps, U. S. A., retired, has been ordered to active service, and to report for duty at Vera Cruz.

Dr. W. H. Halsey, Passed Assistant Surgeon, U. S. Navy, has been detached from the Naval Medical School and ordered to the *Montana*.

Dr. H. H. Hazen attended the annual meeting of the American Dermatological Association at Chicago, May 14 to 16 and took part in the discussions.

Dr. H. C. Heflebower, formerly of this Society, is now Professor of Ophthalmology, etc., at the Eclectic Medical College, Cincinnati.

Dr. L. A. Johnson was married to Miss Irene Stephenson in New York City, June 16.

Dr. I. S. Stone attended the annual meeting of the American Gynecological Society at Boston, May 19 to 21 and took part in the discussions.

Dr. John Sundwall, Assistant Surgeon, P. H. S., has been ordered to the Hygienic Laboratory.

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WASHINGTON
MEDICAL ANNALS

THE EARLY DIAGNOSIS AND PREVENTION OF CANCER.*

By Truman Abbe, A. B., M. D.,

Washington, D. C.

Those of us who see any considerable number of cancer patients, appreciate only too well that most of them have already passed the stage of hopeful treatment before they are brought face to face with the question of treatment sufficiently energetic to eradicate the disease. Recently a woman sixty-eight years of age came to my office. She had in the deep crease between the nose and the lip a fissure not more than a quarter inch long with elevated, hard, pearly edges. The fissure had been there three years and a pimple had been there three years prior to the fissure. She had had palliative treatment off and on for six years directed at that little sore, and under the direction of several good practitioners. All of them had given little attention to the accurate diagnosis of the condition, had called it a trivial affair, and had given it trivial treatment, until she herself demanded more. If you saw the condition today, even without its history, you would all agree that it was an ulcerating epithelioma. Fortunately it is still superficial, and the chances of complete recovery are good, but surely not as good as they were five years ago, when the little pimple had already persisted long enough to raise suspicions that it might not be a benign condition. The question now comes to our minds as to why it was not radically treated at the outset. The patient probably paid no attention to it for weeks, as it gave no pain or annoyance, but at the end of a few months it began to crust over and did not go away, so that she went to the doctor and wanted it cured. It has taken over five years and several physicians, to arrive at the point where one admitted his inability to cope with it by palliative treatment and suggested radical removal.

Such a history is common enough. Sometimes it is varied by the patient not being willing to have any radical treatment, thus

*Read before the Medical Society, May 6, 1914.

tying the hands of the physician. But if we are to improve the results of our treatment in cancer, we must recognize the early cancer or even the potential cancer and treat such radically.

Probably one factor in the patient's mind that defers the radical treatment, is the fear of pain, associated with the treatment, but a little thought on the part of any mature person, guided by the advice of a reasoning physician, would convince anyone that the pain of treatment must be much less than the months of distress from nonradical treatment; and where we can unreservedly promise absolutely painless and still efficient radical treatment, as in those cases appropriate to radiotherapy, the fear becomes wholly groundless. Again, the treatment of cancers is deferred because the laity have a well-founded belief that cancer cannot be cured anyhow, and hence it is no use to try. This belief is well grounded because it is based on the results observed after treatment of the advanced cancers, that make up the majority of those recognized by the laity, and for that matter the majority of those coming for treatment when the patient comes because forced to have treatment by bleeding, pain, the size of the new growth, or ulceration and discharge. At such a time a cancer treatment is one of necessity, not one of election on the side of the surgeon.

The laity and many practitioners do not consider a neoplasm as a cancer until it has advanced to the stage of a constitutional disease. Most of us were taught to think of cachexia as one of the diagnostic signs of cancer. Of course cachexia is present in cancer and one of the fundamental signs, but it is so far from being an early sign of cancer that when we see cachexia present, treatment is apt to be limited to increasing doses of morphine. It is my own belief, based on the history of many cases, and the observation of a few, that instead of loss of weight as a sign of cancer, we should look for a gain in weight as one of the early significant constitutional effects of cancer. An improvement in general health is what we might expect from *a priori* reasoning as to what nature would attempt in the protection of the body from the insidious invasion of a disease. It is what we hear so often from the family when we tell them that one of those in middle life has a cancer. "It doesn't seem possible that the strongest one in the family and she in the best of health, never before so well, could have such an awful disease." We do not hear that remark always, because frequently our diagnosis does not come until so late, that the increase in health has given place to the inevitable cachexia. And again in some, especially the skin cancers, we make the diagnosis very early, before the constitutional improvement has had a chance to develop. But in many of the definite early cancers, the history of increasing general good health is given. Still again in our post-operative observations, when we have removed the great mass of an incurable

cancer, but know that we have left little remnants, such as intrathoracic extensions from a breast cancer, following our patient month by month afterwards, we see first the marked improvement in general health, and then the little recurrent nodules in remote parts of the body, and then the late cachexia. So that we learn to feel uneasy when we find marked improvement in general health after the cancer operation. The improvement in general health that occurs early in the life history of a cancer seems especially worthy of emphasis because from our school training in regard to cachexia, good health is apt to be one of the most misleading signs in early cancer, misleading not only to the layman but also to the physician.

Another not uncommon misleading sign is the absence of pain, irritation, or symptom of any kind commensurate with the gravity of the condition. The absence of annoying symptoms even in the presence of abnormal tissue that persists for months is frequently considered as a potent argument against the diagnosis of cancer. Sometimes the physician himself is misled by the same arguments, but it is only fair to the patient who has arrived at the age of thirty-five, that we should consider as malignant any suspiciously abnormal tissue that persists for six months; and that we should treat as malignant every such doubtful case until the evidence of innocence is forthcoming.

Persistence for six months is not diagnostic but it is suggestive. Even that duration is far too long in some cases. A couple of weeks ago there came to my office a woman sixty years of age who one month before had had a cold, and a fever sore appeared on the edge of her nostril near the ala. At the end of the first week the fever sore enlarged to the size of a huckleberry. In another day or two the mass was the size of a cherry. A dry black center appeared and in spite of soothing treatment for three weeks, failed to decrease in size. Within a month from the time the spot appeared there was a mass the size of a cherry in the angle between the ala of the nose and the lip. Its center was a large black crust which was easily removed showing the characteristic white papillary masses that made the diagnosis of malignancy so evident, that one scarcely needed the microscope in confirmation. One month's growth had been sufficient to develop characteristic tissue and six months would have been an unnecessary and dangerously long time to delay radical treatment.

To aid in the early diagnosis of cancer some of the research institutions are seeking a laboratory method of diagnosis. But practically such methods are dependent on a blood reaction, that implies the presence of a constitutional extension of the disease. So that while we will be very glad to have some such confirmatory test when it is perfected, yet that diagnosis cannot be early enough to improve our chances of cure of the cancer, and we shall have to depend still on the local examinations of each part

of the body to arrive at the early diagnosis. Hence the early diagnosis of cancer will be limited by our ability to identify the lesion in each part of the body, and our efforts towards the early diagnosis of cancer go hand in hand with our efforts to make accurate diagnosis of all other lesions by local examination.

In the alimentary canal where cancers are so frequent, the diagnosis in the early stage is most difficult. The roentgen examinations showing persistent interference with motility in those regions known to be most commonly affected by cancer, namely, the stomach (especially its pyloric end), the cecum, and the colon flexures, should raise our suspicions to the point where even in the absence of all other local symptoms an exploratory laparotomy should be made to determine the cause of interference with peristalsis. A single x-ray plate showing limited motion, should not be considered an argument in favor of operation unless backed up by other signs. But a series of pictures taken on the same day, or week, all showing the same interference, should be given definite diagnostic consideration. In the earliest cases, with pictures that show but slight variations from the normal, it may be necessary to make repeated examinations extending over months, before variations are determined to be persistent and definite enough to warrant operative investigation.

Further, the conditions that precede cancer so frequently and all too frequently, are passed by on the diagnosis of indigestion. Ulcer of the stomach, chronic appendicitis, gallstones, kidney stones, or other causes of persistent irritation, always bring to mind the possibility of cancer as an alternative diagnosis, not necessarily an advanced cancer but one in the early stage, possibly even a precancerous condition, where cure is possible. Such conditions are the ones that we should keep in mind in trying to make a diagnosis of cancer, rather than the classical text-book abdominal mass, with cachexia, which we have all been taught to think of as a cancer, but which we might much better think of as hopeless internal cancer, while we try to recognize the early precancerous irritations.

In our abdominal work and elsewhere, too, there is one thing we can frequently eliminate by a painstaking examination of our patients, and that is the needless exploratory operation in the advanced stages of cancer when operation is perfectly hopeless and metastases have occurred in several parts of the body, in the vertebrae, in Douglas *cul-de-sac* and other positions accessible to preoperative diagnosis. We have all opened the abdomen and to our chagrin found it full of metastases. Then after the useless exploration, we have noted that the *cul-de-sac* of Douglas was infiltrated, the supraclavicular glands enlarged, and other classical signs of advanced cancer present, which we could have determined easily before the operation, if we had only made a thorough examination of our patient instead of following the way of

the eager operator and lazy diagnostician, by operating first and diagnosing the condition afterward, letting the patient run the risks of the operation, to the discredit of our surgery and our diagnostic ability. Careful examination made of every case before we attempt radical treatment, will often determine the presence of unremovable foci of cancer. It is not much to our credit to radically remove a man's hand for cancer, and a week later be confronted with a vertebral metastasis that had been giving symptoms for months. "One reason that cancer surgery is held in disrepute," says Will Mayo, "is because too large a proportion of patients is accepted for operation without explanation, at a stage when there is no possibility of cure, and when the patients and their families should have been informed of the hopeless conditions."

Of the definite causes of cancer we know very little. The factor of age we all acknowledge when confronted with the census reports that ten per cent. of all who live beyond thirty-five years die of cancer, but the age factor sometimes leads us astray so that we fail to consider cancer as a possibility in a woman of twenty-two, and yet cancer at that age is not so very rare.

And on one other factor we are all pretty well agreed, namely, that cancer is very apt to follow persistent irritation whether the nature of that irritation is chemical, physical, or physiological. Of the physical causes we all appreciate the effect of the hot clay pipe on the lip, the broken tooth, the gallstone, the kidney stone, the sunlight on the skin of the farmer and sailor. Recently there came to my office a stone mason who to avoid the chips that flew from his work in chiseling the stone, had for many years turned his right cheek to the chips. There were a number of small epitheliomas on that cheek and the other cheek was as smooth as a child's.

Among the chemical irritations we might class the tobacco juice leading to leucoplakia and then to cancer of the cheek and tongue; coal tar, and paraffin as seen in the persistent workers in those trades; the irritating discharges from a chronic cervicitis; the smegma under the tight foreskin; the retained secretions of an inactive breast.

Among the physiological irritations we think of the frequent metamorphoses in the active uterine and breast tissue, associated with pregnancy, the degenerations of benign neoplasms including warts and moles, the irregular healing of a ragged scar. We get many instances of epithelioma of the face which give as the primary cause an injury from a broken twig which stuck into the face, and the face was a long time in healing; and then the persistent ulcers whether in the stomach or on the skin.

One other element in the occurrence of cancer that is well established is the great frequency of cancer in the breasts and uterus. Knowing that these organs are such frequent sites for

cancerous development, it behooves us to keep a special watch on them in order that we may detect the insidiously growing tissue before it has made itself so evident that the woman is ready to complain. The most rational way to do this seems to be for each practitioner to ask for routine examinations every six months of the women he has delivered, just as the dentist asks for a semi-annual inspection of our teeth. We go to the dentist before the toothache comes, to prevent the pain in our face. With careful education the women who have months of suffering and their lives at stake, will also come to us for the less agreeable examination, if we as practitioners will treat them with due respect and knowledge. We examine to see that every organ is normal, and if we find any abnormality and are in doubt as to its character, we can always get the advice of some colleague whose experience and judgment will help us.

Of the causes of persistent irritation many can be removed if the physician will only think to advise it. If we removed all the persistent irritations certainly we could prevent many cancers. The simplest and most evident are the warts and moles that stand above the skin level, and are located where they are subject to irritation of the fingers in scratching, of the comb in fixing the hair, of the collar and the waist band. Especially noted are those that are irritated by the motions of facial expression in the angles of the eyes, around the nose, on the lip and tongue. The frequency of epithelioma in the crease around the nose and at the angles of the eye is very marked. Warts and moles in these situations are especially deserving of careful treatment.

Carcinoma of the penis occurs so frequently in association with the tight foreskin that it has been suggested that circumcision universally applied would eliminate cancer of the penis. Efficient retraction of the foreskin and reasonable cleanliness of the parts would probably be fully as satisfactory a preventive. In women, the frequency of the primary epithelioma of the vulva at the clitoris, suggests that the same factors are at work there, and freeing of the adhesions that are common enough around the clitoris, would avoid these cases.

The cancers of the cheek and mouth and frequently of the tongue also are so commonly associated with the use of tobacco that we are satisfied that avoiding the use of tobacco would decrease the frequency of cancer of the mouth. In certain parts of the world the chewing of other substances such as the betel nut, leads to epithelioma of the cheek. In smoking, too, the clay pipe might well be put on the black list. The ulcerated tooth also is a common enough cause of cancer to indicate its extraction or at least the best dental care, merely from the point of prevention of cancer, though there are other good and sufficient reasons why bad teeth should be cared for.

The gallstones and kidney stones also, purely for the sake of

preventing cancer, should be removed, although any such reason is rarely necessary to induce a patient to have these calculi taken out.

The workers in certain trades which are known to lead to cancers can be taught to care for themselves so as to avoid the persistent action of the irritant coaltar products, paraffin, or whatever the irritant may be.

The sailor and the farmer who shows the tendency to hyperkeratosis can be taught to keep out of the sun and wind as much as possible, to wear a broad brimmed hat and gloves or even to change his occupation.

The ragged wound can be carefully pared and sutured so as to leave a smooth scar. The persistent ulcer, whether of skin or of stomach, can be painstakingly cared for, and if it does not heal within a reasonable time (we may roughly set six months), it should be excised and the primary cause of the ulcer sought and, when possible, removed.

There has been started in Europe and in some of the states of this country a campaign of education to teach the layman as well as the medical student and the practitioner some of the fundamental facts concerning cancer, and all that we can do to advance that education helps to prevent cancer and to make the diagnosis in the curable stage of the disease. In that line there are certain facts that it would be well for us all to help to spread.

1. Cancer starts in a small localized area which can be easily removed, and in that stage certainly is curable.

2. Cancer develops sometimes very slowly, sometimes rapidly into a systemic condition which is beyond the possibility of cure by any known means.

3. The localized condition can be radically removed without danger to life or function, and in many cases without increase of disfigurement or pain.

4. Incomplete removal and irritating treatment do harm by stimulating the growth, causing it to spread and making later radical removal much more difficult.

5. The statistics of the early hopeful operations in the localized conditions should be kept distinctly apart from the reports of the operations in the later stages, where the condition is already constitutional.

6. *The statistics of the early operations, at the time of election in the cancer cases should be quoted to the layman, not the statistics of the operations of necessity in the late stages.*

7. Wherever persistent irritation is present, cancer should be anticipated and the least suspicious abnormality eradicated.

8. Persistent irritation should be sedulously avoided, especially in those whose family and personal history are suggestive of cancer.

9. Frequent examinations of the regions known to be com-

monly affected by cancer, should be routinely made by the physician.

Dr. Dufour was very glad to have heard the paper. Dr. Abbe had spoken of some of the possible causes of cancer; what does he think of the theory of house infection?

Dr. W. P. Carr said that the idea of the existence of so-called cancer houses is an old one, and to his mind is nothing more than a demonstration of the mathematics of chance. The inoculation of mice with human cancer is another proposition he found very hard to believe. The paper had interested him particularly, because it had shown very well the influence of irritation, either mechanical or chemical, upon the etiology of cancer; the evidence increasingly points to a direct etiological connection between irritation and cancer. The infectious idea is rapidly waning. The part played by the general condition of the patient in making the development of cancer possible, is equal to that played by irritation. The increase of cancer in civilized communities is due both to general as well as to local causes. We may do much to diminish the general cause by preventing nerve weakening, incident to autointoxications and to overfatigue. The main problem will have to do with these general causes. There are many disadvantages about educating the public about this matter; publicity will only serve to cause much unhappiness among timid and imaginative persons.

It may as well be admitted that we are unable to make an early diagnosis in many cases in spite of the utmost care. The disease may begin in some cases at once over quite a wide area, as in the mouth, the stomach, and the uterus.

Dr. Randolph had enjoyed the paper; the observations seemed to him to be sound throughout. He was glad the influence of chronic irritation on the production of cancer had been emphasized. In such papers the general practitioner is apt to get a knock, and the present paper is no exception. But the story told the surgeon is not always as true as it may appear. He had in mind four cases in which he had told the patients with brutal frankness that the trouble was cancer, and without influencing them at all to seek surgical relief. He remembered the case of a young woman from whose breast a supposedly benign tumor was taken under local anesthesia; the mass was found to be an actively growing carcinoma; yet she refused immediate operation and was soon in a hopeless condition. The great uncertainty of the behavior of cancers in different individuals as to growth, metastasis and so forth, constitutes another factor of difficulty in advising the proper treatment. The difficulty of getting cancer patients to the surgeons is further increased by the inadequacy of surgery itself. No doubt it is the best means of cure we have; but until we can do much better in final results,

we must regard surgery as inadequate. The persistency with which the cancer problem has been attacked from the bacteriological point of view, has been a great hindrance to progress. The work in experimental cultivation of tissues will probably carry us in the right direction.

Dr. L. B. Thomson asked Dr. Abbe or anyone else present whether statistics show that there is any truth in the idea of cancer communities?

Dr. Lochboehler said that Dr. Abbe had emphasized the irritation idea of the etiology of cancer; but the familial idea has very much to support it.

Dr. Abbe wished that he could answer all the uncertain questions which arise in the discussion of the cancer problem, but there are many factors which are far from settled. The house infection idea has been widely discussed; it seems to have been proven true of animals, but it has not been proven true of man; there is no recorded authentic case of a healthy person infected by cancer through contact. There can be no doubt that certain families do show a predilection for cancer. Dr. Carr's suggestion that the development of cancer depends in part upon a low state of nerve health has much to support it, but the matter must be regarded as undetermined. Nothing has been proven to show that particular localities predispose to cancer. The best answer to the objection that education would be productive of cancerphobia is that there has been no such result from the tuberculosis propaganda.

All thinking about the cancer problem must be upon its beginnings, its life history, and its cure.

Dr. Randolph had remarked upon a knock directed against the general practitioner; but the criticism had been directed squarely against that type of general practitioner, members of which temporize with cancer in the face of the knowledge of its nature, and when it is evident that no improvement can be expected from medical means. And the criticism is equally against the surgeon, who on the one hand is too timid for the necessary radical measures, or on the other performs radical operations on hopeless cases.

Dr. Abbe desired to emphasize the importance of separating the statistics from the results of operations done at the time of election and those done at the time of necessity—and the fairness of quoting the statistics from operations of election to all patients with early cancers.

THE WORST OF ALL.—"What is worse than having the earache and toothache at the same time?"

"Having rheumatism and St. Vitus dance both at once."—*Ex.*

CASE OF INTESTINAL ADHESION.*

By I. S. Stone, M. D.,

Washington, D. C.

Miss ——, age 35, had suffered from the various symptoms of intestinal stasis for several years. She was, however, well nourished and had led an active life in spite of the annoyance due to digestive disorders, including chronic constipation. During the past year she was obliged to leave her post of duty and went to London, England, where she consulted a gentleman known to be highly proficient in the diagnosis and treatment of intestinal disease, and, in fact, is one of the many disciples of the eminent Mr. Lane. The seat of greatest distress appeared to be in the splenic flexure.

At the operation, performed in November last, I found nothing whatever in the region of the splenic flexure but found a pretty firm band on the outer side of the ascending colon near the hepatic flexure. This band was not a veil or Jackson's membrane, but a development of the mesentery, which seemed to have sufficient size and strength to hold or at least somewhat restrict the colon in its lateral movements. I should say that this band was well organized, was really a growth upon or added to the mesentery, was nearly one-half inch wide and extended past the usual attachment of the mesentery to the periphery or central point of the colon. I found nothing else abnormal in the upper abdomen. There had been no severe ulceration about the stomach, duodenum or transverse colon, nor inflammation about the gallbladder, if one can judge by present appearances.

The appendix was removed because it was suspected, not because it showed any sign of acute disease.

The patient promptly recovered from operation and soon began to take abundant food, and every function seemed restored. However, there were essential elements of a latent psychosis, and while away from home at the seashore a nervous collapse resulted from an insufficient cause, namely, a slight overdoing or, rather, excessive exercise, considering the fact that she had been out of the hospital for only a few weeks. She has been under the care of a neurologist for several weeks, and her present condition is in many respects very much improved.

The constipation which had been a most distressing and annoying complication is practically a thing of the past. Purgatives were continually necessary; now a laxative, or an enema is rarely necessary. Any excitement or worry will, however, cause a return to the hard or scybalous masses, formerly so constantly seen as a result of the colonic mischief.

*Reported to the Medical Society, May 6, 1914.

There is much less flatus, and pain while still experienced about the splenic flexure is not severe, and her intestinal condition is certainly very nearly normal.

HAY FEVER.*

By Dwight Gordon Smith, A. B., M. D.,

Washington, D. C.

The subject to which I invite the attention of the Society tonight is one that has been neglected of late by the general medical practitioner. This state of affairs is chiefly due to the fact that the average hay fever patient is not confined to bed and also that he has become hardened to the lure of various treatments, and hopeless of a cure, so he lets his family physician severely alone; whereas in the event of some diseases less important but curable he would report to the doctor's office at once. Hence the physician sees less of hay fever than he does of many minor maladies.

I come to you tonight merely to arouse an interest in this disease, an interest which of late years has been allowed to pass into a dormant state. I do not bring to you a cure or a complicated system of treatment, for if I did, I would be placed face to face with the grinning visage of the old saw "physician, heal thyself," as for eighteen years I have been a hopeless victim of this "nagging scourge," as Doctor Ulrich so aptly terms it. Hence if this paper tends to take on the tone of a human document or personal memoir, I pray your kindly indulgence and forbearance.

The term hay fever is an absurd and ridiculous one, as this disease is not caused by hay and fever is seldom present. Other appellations are hyperaesthetic rhinitis, spasmodic rhino-pharyngitis, periodic rhinitis, autumnal catarrh, summer asthma, hay asthma, all equally misleading. Of late it has been suggested that it be called *pollenosis,* which I think is a very happy term. This is more apt even if more stilted than the popular nomenclature.

The names like the "cures" of this malady are as numerous as the leaves of the forest of Vallambrosa. However, as I have become resigned to the symptoms of this evil—the worst that Pandora let loose on a long-suffering world—I also am resigned to its name, and will call it by its commonplace title.

The first observer who really paid any attention to hay fever, of whom we have record, was John Bostock, of London, who, as long since as 1819, nearly a hundred years ago, in a description which is a historical classic to the student of medical literature,

*Read before the Medical Society, May 27, 1914.

mentioned the annual attacks, itching of the inner canthi of the eyes, conjunctivitis sneezing, headache, closing of the nostrils, tumefaction of the mucous membrane of the turbinate bones, malaise, weakness, insomnia and all the infernal tortures the average victim undergoes. He also ventured the statement that the mucous membranes were sensitized to the action of dust, light and selective odors. Moebius collected some statistics about "summer catarrh," as it was then called.

Elliotson, in 1837, said that hay fever was probably due to pollen of gramineous plants. This theory, which was a long step in the right direction, was further elaborated by Blackley, who, in a series of brilliant experiments, clearly demonstrated the correctness of the pollen theory. He made researches summer after summer. Some patients he observed for years, patiently putting down in diaries, etc., the results of his observations; the time of the greatest suffering of the patient; even the hour of the day; the extent of the paroxysms, the distance which he lived from the offending plants, and other data. He collected pollen by the aid of glycerine plates during the hay fever season, proving that the pollen was wafted by air currents until it permeated the entire atmosphere. He also caused skin eruptions by introducing pollen into lesions on the surface of the body. Dr. Blackley's work resembled that of the best equipped laboratory of the present day in scientific precision. When we consider the paucity of medical literature on this subject, the small number of patients and the absence of laboratories, we cannot withhold our hearty admiration of the learned observer. It would be a great pleasure to him if he could come back now and know that all his speculations and theories are proven and substantiated by the light of modern research.

Dr. Blackley's efforts were the end of the common sense period in the study of hay fever, for a while, at any rate.

In the bacteriological wave which swept over medicine after his time, the pollen theory was engulfed, and all investigators united in declaring that bacteria were the true etiological factors. It was an easy peg upon which to hang any ill, and, like charity, it covered scores of them. The mucous membrane of the nose and throat is an alluring pond for the bacteriological fisherman, and any kind of germ can be caught there by the Sir Isaak Walton of the microscope. He was a poor bacteriologist, who did not discover at least once a month a bacillus or spirillum which was the true cause of hay fever. Dr. Ulrich says "the writings on hay fever from 1873 to 1902 furnish one of the most fantastic and weird chapters in the history of medicine." It was during the Victorian era when any one afflicted with neurasthenia rushed into print, and aired his morbidity by publishing extracts from diaries; and hay fever was a rich field for the morbid sentiments and personal memoirs of its numerous victims. All sorts

of theories were promulgated, some by laymen, some by physicians, all equally absurd and weird. The most pathetic part of it was that the truth had already been discovered by Dr. Blackley.

One brilliant theory advanced was that certain bacteria appear at a certain time of the year with astronomical exactitude of date, perform their nefarious deeds and then disappear for the rest of the year, during which time they behave themselves; thus the periodicity was explained. Others maintained that the germs causing hay fever were transported by certain pollen; the germs being very fastidious, would ride on no other brand of pollen; and as pollenization took place late in the summer, the bacteria appeared only then, and during the rest of the year were innocuous, hence the periodicity. Truly another Moses was needed to lead us out of the bacteriological wilderness. Dr. W. P. Dunbar, by his masterly work from 1895 to 1902, proved to be the man of destiny.

There are a few facts that I wish to mention in regard to the etiology of hay fever. The disease is due to two causes. One is individual predisposition; the other an exciting external cause, which we know to be the protein toxin of the pollen of various plants, principally ragweed in this country. As for individual predisposition a neurotic element is always present. The question is often asked, Why should the pollen affect one person and not another? Probably for the same reason that strawberries or quinine can cause a rash on some, while others can take large quantities of either the fruit or the drug with impunity. Dunbar says that hay fever is a product of modern living, being due to nerve strain of the individual, and the neurasthenia engendered by our present-day conditions and surroundings.

The professions, notably law, medicine, the ministry, and literary endeavor, have more victims in their ranks than any other class of occupations.

America, the land of nervous expenditure, leads all countries in the number of patients. Neurasthenics are a prey to hay fever. We all have seen patients who get tired easily, then nervous, and prone to attacks of diarrhoea of long duration. Such cases are due to a sluggishness of the suprarenal glands, but lack the ear-marks of a true Addison's Disease. The patients afflicted thus are especially prone to hay fever. Hay fever frequently follows gout, but the latter ailment is not considered such an important causative agent as it was formerly. Many infectious diseases precede hay fever. I have seen many instances of apparent hereditary transmission of the malady. The text books nearly all say that a nasal lesion is necessarily one of the important causes. This may or may not be true. But after the patient once has it, curing the local lesion is of little avail. Nasal catarrh may be thoroughly treated and cured, septum operations performed, spurs removed, but the hay fever goes merrily on.

As for the exciting cause, namely, the pollen of the ragweed, I will recall a few facts patent to all. Hay fever starts at a certain time of the year, generally in the midst of August, not on the same date possibly in different years, but the patients are all attacked on the same day together, thus disproving the theory that hay fever is a result of nervousness and imagination, and is to be dispelled by a course of Christian Science. The season may open on the sixteenth day of August of one year or the twenty-third of August in the next year, but the patients commence sneezing together on the same day of the year in the same locality.

The beginning of the attacks is synchronous with the pollenization of the ragweed. There is nothing of a mental neurosis there, as the average hay fever patient does not know when the ragweed goes into pollen. As a rule he cannot tell ragweed from a box-wood plant. In a year when, as the newspapers say, we are having bumper crops, the ragweed flourishes like the proverbial green bay tree, and an early season ensues. When the season is cold and backward the patient can look to a late attack. I can generally tell about when the season will start, as early as June, by noting the development of the ragweed then.

Many men have found the pollen in the air at any time during the twenty-four hours of the day even in the streets of large cities, and in greater quantities in the fields of the country, and I may add in still greater quantities in the fields and vacant lots in and about the Capital city of the United States. This can be proved by thousands of statements by Dunbar, Blackley, Morrow, Noon, Douglass and others, but I will not bore you by repeating tiresome columns of statistics.

On wet days when the pollen clings to the plant or is washed out of the atmosphere by rain, I have noticed that the poor hay fever patient has a much needed respite; while *vice-versa,* on dry, cloudless days in the early Fall with errant zephyrs playing over hill top and dale and the "earth is all peace and the air is all love," and men say to each other "it is good to be alive," that is the time when, to use slang, the hay fever patient gets *his,* as the air is then full of pollen.

A man suffering from an attack, can get relief by going into a room, shutting the door and windows, hermetically sealing all air passages. He excludes the pollen and thus in a short time feels very much better. All these I have noticed many times among dozens of sufferers, thus again disproving the imagination hypothesis.

Although Dunbar names 44 plants and Osler 150 causing hay fever, after many years of close study and investigation, I believe that in this country there is probably only one important cause of hay fever, and that is the ragweed. Dr. Ulrich, of Minneapolis, a very careful observer, concurs in this belief. No doubt golden rod causes hay fever, and would cause it a great

deal more than it does, but for one thing, and that is it does not part with its pollen easily. Only a high wind can shake it from the plant, whereas currents of air, almost imperceptible, carry ragweed pollen. Ragweed, as Dr. Ulrich says, is the only other flowering plant going into pollen during the hay fever season.

The work of Dunbar proved hay fever to be a pollen toxicosis or toxemia, for he produced amboceptors, antitoxins, precipitins and other immunizing agents from the blood of patients and from inoculated horses. Clowes, of this country, and Noon have gone further along these lines. A test for measuring the strength of an antitoxin and likewise a toxin is made by instilling a drop of pollen solution into the conjunctiva, a reaction takes place which measures the strength of a toxin, antitoxin is mixed with the pollen solution until the reaction fails to show, thus measuring the strength of the antitoxin. This is called the conjunctival test. Extracts of pollen when injected into the bodies of hay fever patients cause severe and dangerous symptoms. These proteins, which are probably of starch derivation, are taken through the diseased mucous membranes of the naso-pharynx and get into the blood, whereby they are carried to the nerve cells, especially those of the autonomous centers, causing a hypersensibility of these centers with resulting irritability of the nasal erectile tissue, with congestion as a sequel, and resulting sneezing, coryza, asthmatic attacks, etc. There is also an irritation of the entire nervous system. This is the latest theory of the cause of hay fever and is probably correct. All this can be caused by injections of extracts of pollen protein toxin. Kamman has found that by removing the oily envelope of the pollen by the use of acetone, he can obtain an extract containing several proteins and an albumen, the first causing general symptoms, the latter local ones.

As for other causes, location of course is important, as places where there is an abundant growth of ragweed, naturally cause the disease. Age does not count much; any one can take it, no discrimination is shown, though more males have it than women, and the white race far more than the negroes or Mongolians. Men who lead sedentary lives or follow occupations involving much mental strain are more prone to hay fever than are those who live outdoors. Hence it is a great deal more prevalent in the city than in country districts.

Symptomatology.—The first great symptom is the periodicity. Nearly all hay fever victims have their attacks annually during a period extending usually from August 16 to October 1 in this country. Let me dispel a popular delusion—that is, that an attack ends with the first frost. The frost has nothing to do with it, as the period ends with the finish of ragweed pollenization, which occurs quite a while before the first frost appears, as a rule. The attacks are usually mild at the start, then become severe,

reaching a climax, then gradually recede. However, I have seen them come in like a roaring lion and suddenly end. The onset is marked by an itching in the nose, then lachrymation and itching of the inner canthi of the eyes, sneezing, rapidly growing worse, and a profuse nasal discharge. There is an intolerable itching of the soft palate and naso-pharyngeal mucous membrane which alone is enough to make one think of nothing else. Headache nearly always is present, being brought on by the incessant sneezing.

Insomnia is common, due to the constant sneezing, plugging up of the nares and itching in the naso-pharynx. A patient may wake up at night and sneeze from fifty to one hundred times and fall back covered with perspiration and utterly exhausted. Malaise, great weakness and irritability are frequently noticed. Fever is usually absent and when present hardly noticeable. As far as the irritability is concerned, the majority of patients from long experience, despite their sufferings, have schooled themselves into being good natured about it. Chilly sensations, ringing in the ears, facial pruritus, disordered stomach and bronchitis are often present. Anemia is always a symptom in varying degree. I have known the hemoglobin to go down to 60 per cent. and red blood cells to 2,500,000. The leukocytes are normal in number nor is there a poikilocytosis. Dr. George Head says there is an excess of eosinophiles. I have had several specimens from various persons, submitted to examination, but have never noticed an increase of eosinophiles. Blood pressure is generally lowered.

A symptom I have never seen mentioned either in the text books or magazines is a severe stomatitis. It extends from the tip of the tongue to the pharynx and then progresses until it probably continues downward as an oesophagitis. This I explain in one of two ways: It may be brought on exactly as the nasal trouble, through irritation of the autonomous centers, or, as we know anemia causes stomatitis, it may be caused by the anemia which is nearly always present. Asthma is a very important symptom. It is usually present after the hay fever has been established several years. As a rule, it does not commence at the beginning, but toward the middle of the attack. The acuteness of the asthma is not dependent upon the degree of severity of the hay fever, as I have seen very bad cases of asthma where the symptoms of hay fever were very mild.

One of the worst cases I have ever known was that of a young hospital interne, on whom Dr. J. Ford Thompson, of this city, operated for empyema following a streptococcus infection. The operation took place at Garfield Hospital on August 18. It was necessarily severe and bloody. An abscess was opened by removal of portions of ribs in the axillary region and traced almost to the sternum. Drainage tubes were inserted. On August 19

his annual attack of hay fever was ushered in, and by the twenty-first was in full swing. Every time he sneezed, blood would ooze from the wound; two stitches were torn loose and the drainage tubes were expelled several times. His sufferings were terrible and the prostration extreme. After a long and painful convalescence he was eventually restored to health. The treatment employed was to close the doors and windows of his room, thus removing him from the zone of ragweed pollen, and give him morphia and atropine.

Treatment.—As many cures as there are sands of the sea shore have been exploited for hay fever. From the most learned and distinguished professors in the chairs of medicine of German universities down to the most ignorant Christian Science healer or vendor of Indian root pills, all persons interested in the healing art have shot their therapeutic arrows at hay fever. Nostrums and treatments by homoeopath, osteopath, eclectic chiropractor, bone setter, dispenser of patent medicines, gypsy healer and Christian Science, have been employed in vain. Among drugs of a legitimate character which have been used are alypin, atropine, arsenic, acetic acid, antitoxin, belladonna, cocaine, eucaine, adrenalin, thyroid extract, and a host of glandular extracts, salicylates, iodides, phosphorus, zinc, iron, massage, electricity, to say nothing of a myriad of homoeopathic mother-and-daughter tinctures to the 1 to 10,000 degree, and millions of patent, proprietary and quack remedies.

Atropine gr. 1/100 by mouth will give a few hours' rest to the patient. Adrenalin solution or ointment, which you will find adorning the covers of our journals during the months of August and September, applied locally, gives relief by constricting the blood vessels of the nasal mucous membrane for a short while, then relaxation accompanied by congestion follows, and a condition worse than ever results, hence I seldom prescribe it. Internally adrenalin substance may help temporarily, in cases where the suprarenal glands are sluggish in action. These patients obtain relief and their general health is greatly improved by the administration of five-grain tablets of suprarenal substance three, four or even six times per diem, for a few days. A well closed room is beneficial. A sea voyage is the ideal treatment, but, alas, all the victims are not millionaires! Mt. Desert is almost as good, so is a trip to Bethlehem, New Hampshire, but the cost is almost prohibitive to a man of moderate means.

Removal of the ragweed is the ideal measure which may be found in the Elysian fields, but not in the fields and vacant lots of the District of Columbia. Right here I propose to do some missionary work. All of you gentlemen who have senators, members of Congress or city fathers as patients, please speak a good word for the hay fever patient, by having laws enacted compelling owners to cut or destroy all noxious weeds on every

vacant lot in the city. It will be a jewel in your crown. The American hay fever association could be rejuvenated and moulded after the various tubercular and hygienic societies, and should start a country-wide crusade against the ragweed. County commissioners should be appointed to supervise the wholesale destruction of the plant and a campaign of education inaugurated, after the manner of our brethren engaged in the interests of sexual hygiene. A central bureau could be established in Washington and the various units could receive their instructions from here. But these matters are more for the united action of the hay fever patients themselves than for the medical profession.

This will undoubtedly be the solution of the problem, but it will take many years of patient endeavor to carry it through, and until then we must content ourselves with finding some method of ameliorating the sufferings of the patients, even though it be only temporary. Dunbar was a Moses, as I have said, who led us through the wilderness, but was finally deprived of entering the promised land, as his remedy was not a success. It is an antitoxin obtained by injecting doses of pollen solution into a horse until it can stand enormous amounts, then drawing off the serum and reducing it to a powder or putting it up in solution. This is instilled into the nose and eyes. Dunbar said the reason why there were so many failures was because patients used his remedy during the attack only, and it should be used not only during, but several weeks before, an attack. However, I have known cases that were treated before the hay fever season and no results. This serum, if it had any virtue at all, should have been injected. Professor Dunbar proved everything up to the last minute, and then failed to give the final blow which would drive the nail home. I never could understand why, after erecting such an enormous theoretical structure, he failed to apply what every one would regard as the logical capstone.

The tendency now is to discard antitoxin and to use small doses of protein toxin after the manner of vaccines. The latest, and what many hope will prove to be the closing chapter of "this strange eventful history" is being written now by a set of investigators who have taken up the work where Dunbar left it, applying modern beliefs to his theories, and carefully and scientifically working toward the *Ultima Thule,* namely, a cure. They promise nothing, but hope for much. They are such men as Ulrich, of Minneapolis, Clowes, Noon, Freeman and Brookes. These men are convinced that hay fever is caused by ragweed pollen principally which permeates the atmosphere. They collect it from the plant, remove its oily covering by the use of acetone (Kamman's method), or by alternate freezing and thawing (Dunbar's method), then extract the proteins and toxins and inject them subcutaneously into the afflicted patients, in small doses,

every three or four days, testing the improvement with the conjunctival test.

Noon and Freeman inject .0001 mg. of ragweed pollen extract every 3 days, then every 5, and finally every 10 days. They report that of 29 cases, 20 were greatly improved, increasing the resistance as much as two hundred and fifty times "the initial unit of sensibility." Clowes, of Buffalo, a bright investigator, one of the first men in this country to find immune bodies such as precipitins and antitoxins in the blood of hay fever patients, has gone much further than the English observers, and has increased the resistance one thousand times. He uses infinitesimally small doses, varying in amount from 1 c.c. of 1 to 500,000 to 1 c.c. of 1 to 5,000,000 dilutions. Dr. Henry Ulrich, of Minneapolis, has also accomplished a great deal along these lines. I take occasion to thank him for data he furnished me, used in this paper. During last season he tried his extract of pollen toxin in twelve cases. He used one-half a cubic centimeter of 1 to 1,000,000 dilution. Subcutaneous injections were made every two or three days. Out of 12 cases 9 were greatly improved. All had had hay fever of years' standing. Dr. Ulrich, contrary to the belief of European investigators, believes hay fever is an anaphylaxis, in the cases of its victims; as horse serum is anaphylactic to certain persons. He compares the symptoms of hay fever with the rash caused by horse serum on certain individuals, after injections of antitoxin. However, there is too little evidence *pro* or *con,* as yet, to decide whether hay fever is anaphylactic in character or not.

In conclusion, there are a few salient points on which I would lay special emphasis. As a mild suggestion to the medical profession I might draw its attention to the fact that if there were as much individual effort spent on the study of hay fever as there is on any one of many infectious diseases its cure would soon be realized.

The present list of drugs and medical agents is unavailable. The only means we have is to either send the patient to places where there is no ragweed or destroy it everywhere. The last measure would bring about the ideal condition.

Injections of minute quantities of the extract of ragweed pollen should be tried out thoroughly, and instead of four or five men working along these lines, we should have four or five hundred, considering the vast amount of material in this country. I await with interest reports from all over the country next Fall, but I also advise my friends afflicted with hay fever not to be too hopeful.

Dr. Bowen desired to thank Dr. Smith very heartily for a most interesting and instructive paper.

Dr. L. O. Howard had been impressed by the emphasis put

by the essayist upon the etiologic importance of ragweed; would we not have as much hay fever if the ragweed were eliminated and goldenrod remained abundant?

Dr. O. Wilkinson complimented the paper. He did not believe, however, that ragweed is the only cause of hay fever; he sees as many hay fever patients out of the ragweed season as in it. He has had for a number of years patients who complain that whenever they go South by rail, passage through the tunnel under Capitol Hill provokes an attack of hay fever; there is no ragweed element in these cases. He has also known many patients who get entirely well of the disease; some of them may now have a bunch of ragweed shaken in their faces without sneezing. He also encounters many more cases of hay fever among office people who never come in contact with ragweed than among farmers who live in the midst of it. Hay fever sufferers always have some diseased condition of the nose. And there is a third condition necessary for the development of the disease, namely, an abnormal nervous system. To sum up, three things are necessary to explain hay fever: an exciting cause; a diseased nose, and a certain nervous predisposition. Next to the importance of treatment of nasal disease, is the hygienic management of these persons, as to their diet, exercise and bathing. Such patients should by all means stop hot bathing, especially in the morning.

Dr. Macatee suggested that different individuals may have been sensitized by different pollens and that the toxic element in the pollen of the same plant may be slightly modified by the locality in which it grows, both of which factors may have some bearing on the different seasons in which the disease manifests itself in different individuals and upon the fact that removal to a different locality, even if the hay fever provoking plants grow in that locality, may serve to relieve certain sufferers of the disease. These considerations may also have some bearing upon the uncertain results obtained from the use of hay fever antitoxins; it may be that the development of a universally successful antitoxin will depend upon making it highly polyvalent, or else that it will be necessary to determine the exact sensitizing poison in each particular case.

Dr. Lochboehler said that Dr. Wilkinson had spoken of familial nervous predisposition to hay fever; his own observation had been that hay fever is more apt to single out a solitary member of a family for its victim.

Dr. Davidson asked if any observations had been made upon the blood pressure of hay fever patients? Does the pressure vary as between that found during an attack and that found in the intervals?

Dr. Smith said that much golden rod is to be found at Bethlehem, N. H., but no ragweed. In some cases golden rod may

provoke an attack of hay fever, but only when the subject has been sensitized by ragweed. Horse asthma and urban freedom from ragweed are suggestions that may be met with the facts that horses notoriously go where ragweed grows, and that ragweed pollen has been found on top of the Singer tower. He was glad to hear that so much can be done by local treatment of the nose, but he has had no personal success with it. As to hot bathing, nowadays patients go to the sea shore and there they do not indulge in hot bathing; but then there is no ragweed at the sea shore. The polyvalent character of the toxins in different pollens as suggested by Dr. Macatee may prove a pertinent fact; much investigation needs to be done in this line. There does seem to be some tendency to transmissibility of a nervous tendency to the disease. The blood pressure is generally low in the hay fever season.

CASE OF VOLUNTARY DISPLACEMENT OF THE EYE.*

By Arthur H. Kimball, B. S., A. M., M. D.,

Washington, D. C.

This case was called to my attention sometime last Fall during one of my weekly visits to the Government Hospital for the Insane.

The man, who is about thirty years of age, can displace the left eye from its socket, by manipulating it with his left index finger. During the latter part of last Summer or early Fall it was first noticed that he was playing with the eye and continually trying to introduce his finger into the orbit, beside the eye. In a very few weeks he was able to dislodge the eye from the socket. This effect has been evidently accomplished by a gradual stretching of the conjunctiva and the extrinsic muscles.

Upon releasing the eye it is drawn back into the socket by the action of the muscles, and, as you can notice, with the exception of a slight prominence, the eye appears to be in about the same condition as the right eye. Of course, owing to the great amount of stretching to which the optic nerve has been subjected, the eye is absolutely blind. The nervehead shows complete atrophy.

You will notice that in spite of the stretching of the muscles they still retain their tone. The excursions of the left eye in every direction are about equal to those of the right.

The patient says that this abuse of the eye causes him abso-

*Reported to the Medical Society, May 6, 1914.

lutely no pain whatever. He is playing with the eye almost constantly, and seems rather proud of his accomplishment.

Dr. Dufour had never seen the counterpart of this most interesting case. Many years ago he had seen a woman in Dr. Burnett's clinic at the Emergency Hospital who was able partially to dislocate the eye-ball; but only to about one-third the extent of the dislocation in the present case. The dislocation can, of course, readily be explained by the gradual stretching of the tissue at the expense of the optic nerve.

Dr. Davidson asked how many such cases are on record?

Dr. Kimball said that he had seen no similar case report, and none of the eye men with whom he had talked had ever heard of such a case.

HAIRBALLS.*

By D. S. Lamb, A. M., M. D., LL.D.,

Washington, D. C.

Hairballs, as they are called, are masses of hair, mixed with more or less other material, found in the stomach or intestines. When small they are round or oval; larger ones may have the same shape as the stomach itself. The shape is acquired by the peristaltic movement of the stomach. When small they are usually found in the pyloric portion, where they act as a ball valve. They are usually single, but sometimes there are two or more. Occasionally they extend up into the oesophagus or down into the duodenum, and have been known to extend into the jejunum. Sometimes when quite small they are passed by stool. Apparently the stomach secretion has no action upon hair. When completely formed, they become covered with a concreted mucus.

These hairballs are frequently found in the stomach or intestines of the lower animals, especially in the horse and cow, and are said to be especially common in the angora cat. Their occurrence is explained by the habit some animals have of licking and swallowing loose hair; this is particularly the case at the time of year when the animal is shedding its hair.

Sometimes the hairball causes death; by hematemesis, by vomiting and diarrhoea, by ulceration or perforation of the stomach, or by obstruction of the intestines.

There are in the Army Medical Museum 23 specimens; all of them removed, from the stomach of the animal, and nearly all removed after death; 3 from horses, 19 from oxen, cows or calves, and one from a chicken. The case of the chicken is the most

*Reported to the Medical Society, May 13, 1914.

interesting; the ball was removed from the craw; the incision was sewed up, the chicken recovered. It is stated that the chicken had been unable to get any grass to eat; it was a pet and associated with a pet dog; and the chicken picked the hair from the dog. For several days before the operation the chicken was unable to eat, and was threatened with starvation.

Hairballs are also sometimes found in the human stomach. There is an opinion that they are found most often in the stomachs of insane patients; but the reports do not bear this out; the cases in which such bodies have been found in the insane are very few. Insane persons often swallow other foreign bodies but rarely swallow hair. These bodies are found more often in girls under 20 years of age; rarely in male subjects, and rarely in women over 20. Up to 1909 about 42 cases in human beings had been reported.* The largest weight reported was 6 pounds 2½ ounces. In a number of these cases the mass was successfully removed by operation, but in almost all of them the diagnosis was that of tumor, and the presence of the hairball was only ascertained at the operation or at the autopsy.

The reasons given by patients for swallowing hair were because the act was pleasurable, because it seemed to make the voice clear, or because it cleaned the tongue. Occasionally the act was an attempt to commit suicide, which, however, usually failed.

Dr. Selby said that in the January number of *Archives of Roentgenology* there were reported two cases of hairballs in the human stomach, the second case being diagnosed by x-ray pictures aided by experience with the first case. These cases were reported by Mr. Holland, of Liverpool, and Dr. Selby had been so fortunate as to see one of the cases with the specimens. This patient was a young woman who had long eaten hair because the practice gave her pleasure; gastrotomy was done and a large hairball removed; the surgeon noticed that the ball was facetted, whereupon he investigated and removed a second ball; the second ball, however, was found to be marked with two facets, and further exploration resulted in the removal of a third ball.

A Poser.—"There is nothing the matter with you," persisted the Eddyite, "absolutely nothing. Can I not convince you?"

"Let me ask you a question?" replied the sick man.

"A thousand if you like."

"Well, suppose a man has nothing the matter with him, and he dies of it, what didn't he have the matter with him?"—*Philadelphia Press.*

*See compilation by Butterworth, Jour. A. M. A., 1909, liii, p. 617.

THE POST OPERATIVE LEUCOCYTE COUNT, WITH ESPECIAL REFERENCE TO APPENDICITIS. ABSTRACT.*

By Charles S. White, M. D.,

Washington, D. C.

Of the great number of internists and operators who are using the leucocyte count today, not a large number attach any significance to it unless supported by clinical evidence, for it is the experience of many that as an index of infection it has proved unreliable and even contradictory in certain instances, yet it cannot or should not be condemned because biological research has not made the human body an open book. Even though we distrust it, we continue to apply the leucocyte count as a test, and when the count tallies with our pathological findings we comfort ourselves with the thought that the pathology is as transparent as crystal, but when the count seems at variance with our preconceived estimate we declare that it is far from infallible, in fact, often most misleading.

As a means of determining if pus is present, the leucocyte count has held a prominent place among the diagnostic signs, much weight has been attached to it, but we hear little of the leucocyte count *after* operations, or, in other words, its bearing on the final prognosis. If any dependence may be placed upon a count prior to operation, then what is its standing afterwards? Does the leucocytosis continue? Does it instantly vanish and recur or does it gradually decline to normal? Is there consistency enough in the behavior of the leucocytes after operation to warrant the assertion that it is of value?

From the study of about thirty abdominal cases, chiefly involving the appendix and of a variety of types, there seems something tangible that may be formulated into conclusions which only further observations can confirm and enlarge or reject in their entirety.

The author has constructed a table or chart for comparative temperatures and leucocytosis, and it must be manifest that such a scheme is purely arbitrary, and if a dozen tables were designed by a dozen operators with the view of constructing a model chart, no two would probably be alike. For a temperature of 98, a leucocyte count of 7,000 is selected, 99, a count of 9,000, 100, a count of 11,000, and so on; so for each degree of temperature we have 2,000 additional leucocytes. At 104, 19,000 would be the corresponding leucocytosis. The faults in such a table are

*Read before the Medical Society, May 27, 1914.

very apparent, for we could have no temperature to correspond to 40,000 leucocytes, and such a count is not rare—indeed, we may find such a count with a low temperature. Merely to illustrate the principle, however, the chart adopted serves the purpose.

Beginning with the simple laparotomy, without inflammation and a normal number of white cells per c.m., what shall we expect of the subsequent leucocyte behavior? Almost every such operation is followed by a rise of temperature and a slight leucocytosis, succeeded by a prompt and permanent decline, provided no infection is introduced at the time of operation.

Considering the next acute infections which are arrested by operation, we get a graphic record of the leucocyte behavior which points by an unmistakable sign that the active process has been abridged. We should expect a precipitous decline in the count, but in those cases in which the high count persists, the limitation of the infection is not so well marked and a longer, if not a more serious convalescence ensues.

The next class is that in which a mild infection is continuous or grafted on the initial infection, such as a stitch abscess, following either a single acute or suppurative appendicitis. This is not an unusual type at all, but is often the cause of grave concern because the fever and leucocytosis are continued. It seems to the writer that a high count recorded after a gradual decline is a distress signal, regardless of the temperature, and cannot be dismissed by the clinician as a sign of little importance. On the contrary, it is most significant, and we must search for the etiology.

The next class of cases is that in which the infection has not remained isolated but has become more or less general, involving the peritoneum to some extent, although this may or may not be manifested by ocular examination at the time of the operation. In many cases of appendicitis the abscess can be drained without arresting the peritoneal invasion, although a firm wall exists. A culture from the peritoneal fluid outside of the abscess is not always sterile, and there can be little doubt that what may appear a firm barrier against infection of the peritoneum proves *post mortem* that it was not invulnerable to the microbic assault.

The remaining class is that in which a general infection is marked by a very low resistance, and here we have the leucocyte count remaining consistently low.

No discussion of the value of the leucocyte count in prognosis would be complete without a reference to an article by Gibson, published in 1906, in which he pointed out the importance of the differential count, and devised a chart which bears his name, by means of which a fairly accurate estimation of the resistance is possible.

My chief reason for not employing it more frequently is the amount of careful work necessary to insure an accurate reading,

and such counts are not possible in my hospital practice. On the other hand, it has been possible to get the ordinary count in almost every case, and it has been our routine to employ it in all infectious surgical cases where the condition is grave or likely to become so. It has been a source of much comfort to have these counts, especially when a flare-up in the temperature occurs well in the convalescence and also in the seriously involved cases, for it does seem to furnish a view of the case from a new angle.

It would seem to the author that we are justified in arriving at the following conclusions, temporary though they may be.

First. After catarrhal appendicitis or mild infections, with removal of the source, we may expect an initial leucocytosis followed by a gradual and permanent decline in the absence of complications.

Second. After a mild infection and the source removed, a secondary infection of a small area or a transient toxemia, is noted by a moderate leucocytosis, usually present after the first week of the illness.

Third. Secondary infection of the peritoneum with good resistance shows a very early and a very high increase of the leucocytes and will continue for an extended period: that the pulse and temperature alone are misleading, but the leucocyte count as an adjunct gives much better insight into the mischief within the abdomen.

Fourth. That with general peritonitis infection, with a constant low count or a declining leucocytosis, the prognosis is very bad.

Dr. Macatee said that Dr. White's paper admirably served to emphasize the important part the hospital laboratory should play in the clinical observation of patients in hospital. It was notorious, not to say scandalous, however, how very difficult it was to get laboratory investigations made promptly and accurately in the local hospitals, and the subject was one that might well engage the attention of an Efficiency Committee on Hospital Work, the appointment of which had been recently advocated.

Dr. Chappell briefly commented on a case in which a rise of temperature was discounted as to significance by the absence of a corresponding rise of the leucocyte count.

Dr. Davidson commended Dr. White's work as set forth in the paper. In surgical work done by Dr. White for him, this postoperative laboratory observation had been most serviceable.

Dr. White said that much needed to be done toward demanding more and better laboratory work in the Washington hospitals. It was a matter for regret and a cause for humiliation to consider the very little scientific use that was made of the clinical material passing through the hospitals of this city.

CASE OF SYPHILITIC MULTIPLE SCLEROSIS; DIAGNOSED CLINICALLY IN SPITE OF NEGATIVE LABORATORY TESTS.*

By Tom A. Williams, M. D., C. M. (Edin.),

Washington, D. C.

A woman aged 39 was sent to me from New York State because of what had been diagnosed by several neurologists as multiple sclerosis. Her physician wrote asking if I could suggest some treatment or perhaps modify the diagnosis. The patient declared that she had been intensely nervous since the birth of her boy eight years ago; since 2½ years this had consisted of palpitation and a feeling of dread, great unsteadiness of the hands, voice and gait. In addition, there was marked incontinence of urine and extreme obstipation with occasional incontinence. She was dizzy when tired, and her eyes were blurred.

Examination showed great exaggeration of the tendon reflexes but no corresponding diminution of the cutaneous reflexes; and the great toes did not extend upon stroking the sole of the foot nor by other stimuli used to provoke this reflex. But that there was some interference with the pyramidal system was shown by absence of reflex flexion of the toes, all of them remaining immobile to the stimuli of reflectivity. The absence of the sign of Babinski in a patient whose illness was of such gravity and duration made me suspect that insular sclerosis might not be present after all; and on proceeding to the examination of the eyes, my doubts received further support; for no nystagmus occurred even during rapid intentional movements; and the optic papilla showed no atrophy, although slightly pale.

The absence of three signs of such importance compelled me to contradict the previous diagnosis, in spite of the presence of intention-tremor, scanning speech, impaired diadocokinesis, a slight *moria,* such as often occurs in insular sclerosis, and a diminution of vibration sense in the legs. But it is pretty well known to neurologists that the symptoms of insular sclerosis may be simulated, even to a greater degree than was shown by this patient, when there is a diffuse chronic inflammation of the nervous system produced by the treponema pallidum. This I suspected to be the condition of this patient. Accordingly lumbar puncture was done February 13th, when 30 c.c. of fluid very rapidly came, and Dr. Nichols reported that there were 7 lymphocytes per c.m. This slight lymphocytosis still left us in doubt;

*Reported to the Medical Society, April 8, 1914.

for an increase in cells has been reported in cases of insular sclerosis.

However, I put the case to the patient, who decided to permit the experiment. So I injected a full dose of salvarsan into a vein February 22d. This rendered her almost helpless for about two days. Then she began to handle herself much better; and on the 28th, she also felt much better and the motility was greatly improved. The reflexes and sensibility were as before; but the intention-tremor had greatly diminished. So March 7th the spinal fluid was again examined, and a luetin test was begun by Dr. C. A. Simpson. The cells had diminished to 5 c.m. This puncture caused great pain, headache and nausea. After this cleared up, salvarsan was again given March 15th. Within 24 hours, her legs gave way twice; but a great improvement again followed in walk and speech; the intention-tremor disappeared, and her sleep became restful. The Wassermann reaction remained negative as before; but a papule rapidly formed where luetin had been injected; and when I saw her five days after the salvarsan, a broken pustule was present which Dr. Simpson pronounced a luetin reaction.

The following letter was sent to her doctor, who expressed his pleasure thereat in stating that the case had baffled several neurologists:

"Mrs. B. is returning after receiving salvarsan twice and appearing much improved. I think we may say the diagnosis is positive now; for the reaction to luetin, which Dr. C. A. Simpson declares to be pathognomonic, declared itself after the second injection of salvarsan, although it had been quiescent more than a week before that. This in connection with the puerperal history, the lymphocytosis of the spinal fluid and the absence of some of the most characteristic signs which might be expected in true insular sclerosis, decide me. I recommend that you continue treatment by salvarsan and mercury for some months; although I do not believe that full restoration of function will occur now, as there must be considerable destruction of nervous tissue. I have not named the diagnosis to the patient. Please accept my thanks for sending me a problem of such interest and for the pleasure of having been able to afford some benefit."

Commentary.—The low lymphocyte count in the presence of such severe symptoms and the relative poverty of radicular signs indicate that the pathological process causing the symptoms is within the central nervous system in the main, and is not merely an involvement of the roots by an extension of syphilitic leptomeningitis, from the meninges into their coverings, as is the case in tabes dorsalis. There are, in all probability, foci of ill-nourished, if not necrotic tissue, scattered throughout the central nervous system, perhaps as a result of endarterial proliferation which may have led in some cases to obliteration. In proportion

as this is incomplete and the tissue elements have not perished, there will be restoration of function, as tissue activity is resumed upon the removal of exudate from arterial wall or connective tissue by the destruction of its cause, the treponema pallidum, by salvarsan or mercury.

In the presence of lesions of this character the signs may lack all systematisation, as in this case. In insular sclerosis, it is rare that the mid-brain or the pyramidal tract escapes when the process is at all extensive. The absence of nystagmus and extensor response of the toes immediately made me suspicious of this diagnosis. The experimental therapeutics confirmed my doubts; but unless the luetin reaction be regarded as pathognomonic, only an examination *post mortem* can give absolute proof; and in some cases even this has failed to distinguish between disseminated sclerosis of the usual type, and that sometimes believed to occur as the result of syphilis. It must not be forgotten that *post mortem* appearances are, after all, merely the results of the reaction of the body to insult, and that these results both resemble one another and vary so much that few of them are pathognomonic, for any particular invasion. For instance, even plasma cells, so characteristic in paresis, merely denote chronicity, and may occur under many conditions quite irrespective of syphilis. Again, during life the reactions of the body to the particular noxa are by no means certain; otherwise we should not find Wassermann reaction absent in nearly 40 per cent. of tabetics, and we should not find it present as a reaction to the organism of leprosy.

In conclusion, it cannot be too often insisted that the absence of the reactions which are detected by the usual laboratory tests for syphilis, is by no means conclusive of the absence of that disease; the failure to find them merely indicates that, at that particular moment, the patient is not reacting strongly enough in that particular way. The results of previous reactions as manifested by present clinical signs, furnish a basis for diagnosis in every way as potent, and no more lacking in that objectivity which it is the fashion to claim preëminently for certain methods conducted in the clinical laboratory. A moment's reflection shows the fallaciousness of this claim; indeed, a non-reacting pupil, an absent knee-jerk, a positive great-toe sign, are no less objective than blood-cell count, diazo reaction, or Abderhalden test; furthermore, these latter are much richer in liability to false interpretations as well as errors in observation than are clinical signs in the hands of an experienced neurologist.

Dr. Hough said: When we take into consideration the histological findings in certain forms of syphilis of the central nervous system, it is not difficult to understand how it may be that some, or in rare instances, all the laboratory tests in general use

may fail to show evidence of the disease. However, before one is justified in concluding that the various tests are negative, it is quite apparent that it is necessary that they should be made. There are two or three tests that have not been mentioned by Dr. Williams in the case which he reports. But that is not the main point I wish to make.

Many of our best authorities on the subject state definitely in effect that there is no symptom, or group of symptoms, met with in syphilis of the central nervous system that may not also be found in multiple sclerosis. It is easy to understand from the nature and distribution of the lesions why this may be. A typical picture of multiple sclerosis may occur in cerebrospinal syphilis, specific basal meningitis, especially specific myelitis, and even in hereditary syphilis.

As Nonne states and gives cases with autopsy findings, both diseases may have the same beginning, both may show the same intermittent improvement and both may show the same remissions after antisyphilitic treatment. The histological picture of the two diseases is usually quite distinct. Multiple sclerosis, as has been reported by several men, may occur in cases with a history of syphilis, or even in manifest syphilis. This is not surprising when we consider how very common syphilis is. It is not difficult then to understand that the differential diagnosis of these two conditions may be exceedingly difficult.

Now what proof have we as to the correctness of diagnosis? The final decision is based upon the anatomical findings solely and absolutely, and if the anatomical findings do not bear out the clinical diagnosis, then the clinical diagnosis must give way. As near as it is possible to approach a correct differentiation *ante mortem,* is by the application of all the clinical laboratory tests; especially important here is the *auswertung* reaction of Hauptmann. This is the opinion of some of the best authorities in the profession stated both in monographs and in text books.

Therefore, I think that Dr. Williams is not justified in drawing the definite conclusions that he has in this case in the absence of the final decision.

Dr. Hickling said that whenever the subject of multiple sclerosis is brought up in neurological circles it is the source of much academic debate. In this country the disease constitutes only a small percentage of the total of nervous affections; whereas abroad the diagnosis is more frequently made. This may be accounted for perhaps by the fact that we are apt to demand the presence of all the cardinal symptoms before making the diagnosis, whereas abroad the diagnosis is sometimes made upon some of the collateral symptoms. But with all of the so-called cardinal symptoms present during life, sometimes the autopsy fails to show the lesions of this disease, and on the other hand the lesions have been found in cases in which there were no *ante mortem*

symptoms. It would seem that, as in Dr. Williams' case, where we obtain confirmatory laboratory findings, the diagnosis of simple multiple sclerosis falls down and that Dr. Williams had correctly attached importance to the evidence pointing to syphilis. It appeared to Dr. Hickling, however, that Dr. Williams had failed to say what had suggested the idea that syphilis was at the bottom of the condition, nor had he stated the eye findings.

Dr. Roy asked Dr. Hough how he would determine that syphilis had no connection with a case in which the lesions of multiple sclerosis were found at autopsy?

Dr. Hough said that his statement was to the effect that in two diseases in which the syndromes are so entirely similar, the final decision as to diagnosis must rest upon the *post mortem* findings; that where the anatomical findings do not bear out the clinical diagnosis, that diagnosis must give way.

Dr. W. T. Davis inquired if the absence of optic atrophy and the absence of nystagmus negative a diagnosis of multiple sclerosis? And were the extrinsic ocular muscles examined for paresis in this case?

Dr. Roy inquired if it was not a fact that Dr. Williams' diagnosis of syphilis depended entirely upon the belated appearance of a positive luetin reaction?

Dr. J. Lawn Thompson asked if Dr. Williams had subjected the spinal fluid to the Wassermann test? Dr. Thompson had found the reaction positive in the spinal fluid in two cases in which he had been led astray by repeated negative Wassermanns of the blood. Possibly the examination of the spinal fluid would have been of value in the case reported.

Dr. Williams said that of course every one knows that negative Wassermann does not negative the presence of syphilis. There had been no Wassermann of the spinal fluid because it is so rarely to be found when the reaction is negative in the blood. The only ocular symptoms had been mentioned in the paper; in short, the eyes were normal, except for an occasional unexplained dimming of vision. It is true that multiple sclerosis may improve under antisyphilitic treatment; but it is also true that multiple sclerosis and cerebro-spinal syphilis may be exactly alike so far as the gross pathological findings are concerned; they differ histologically, however. In this case the luetin test was the only proof short of a *post mortem*. All the laboratory tests were made in this case except the Wassermann of the spinal fluid, and this reaction was not to be expected.

He realized of course that multiple sclerosis is a distinctly remitting disease, whether under treatment or independent of treatment. Commenting on Dr. Hickling's remarks, Dr. Williams expressed the opinion that multiple sclerosis is as frequent here as abroad, but it is not so frequently recognized as such.

THE CLINICAL RELATION OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN THE DIAGNOSIS OF CERTAIN ACUTE CIRCULATORY CONDITIONS.*

By Harold H. Newman, M. D., and Melville B. Fischer, M. D.,

Garfield Hospital, Washington, D. C.

The literature during the past few years, has contained much on blood pressure. The methods for obtaining blood pressure have been discussed. Systolic pressure has been dealt with. Diastolic pressure has given origin to many diverse opinions. Hypertension and hypotension have had their exponents. The peculiarity of the aortic insufficiency pressure—relatively low diastolic pressure—has been noted.

The greater number of writers agree that the auscultatory method for determining blood pressure is the most accurate, and this is the most generally accepted method at present. The method is as follows: Auscultation over the brachial artery below the arm band, having first obliterated the radial pulse by the necessary pressure, gives different tone-phases as the external pressure is slowly lowered. There are five tone-phases. In the order of occurrence, they are:

1. First phase—a series of clear tones or clicks.
2. Second phase—a phase of blowing murmurs.
3. Third phase—a phase of clear, sharp tones.
4. Fourth phase—a phase of dull tones.
5. Fifth phase—the cessation of all sound.

Most, if not all, observers agree that the first of the series of clear tones or clicks, or the first phase, is due to the systolic pressure, and that the diastolic pressure coincides with the point at which the clear, sharp tones, of the third phase, become suddenly and markedly dull—the fourth phase.

There is some difference of opinion relative to the diastolic pressure reading. Korotkow[1], in 1905, contended that the diastolic pressure corresponded to the point where all sound disappeared. McWilliam and Melvin[2] express the reading of diastolic pressure different from the former. Through a unique series of experiments they have come to the conclusion, that "the level of armlet pressure at which the sounds suddenly decline, becoming weaker and duller, is to be taken as the index of intra-arterial diastolic pressure." We have noted in taking the diastolic pressure, that the clear, sharp tones of the third phase, do not always become suddenly and markedly dull, sometimes fading more or less gradually into the dull phase—the fourth phase.

*Read before the Medical Society, May 13, 1914.

In the latter condition, according to the index of McWilliam and Melvin; we believe the reading of the diastolic pressure is higher than in the index of the first method cited; whereas in the condition of sudden change, from the third to the fourth phase, we believe the indices to coincide and the readings to be the same.

Heart Failure, Hemorrhage and Shock.—There are certain acute circulatory conditions, namely, heart failure, shock and hemorrhage, which the clinician is called upon to differentiate and treat. The diagnosis at times is easily arrived at, but at other times is exceedingly difficult; for example, a patient with organic valvular disease of the heart, in the third week of typhoid fever, when there is a sudden four to five degree drop in temperature and an increased pulse rate (heart failure or hemorrhage?); collapse following operation, when there is a possibility of myocardial weakness and at the same time shock (heart failure or shock?).

The treatment in heart failure is directed towards reducing the heart-load and such measures, as diuresis, purgation, venesection, etc., are resorted to. In addition, cardial stimulants, such as digitalis, strychnine, etc., are employed. In hemorrhage, normal saline solution is indicated, to increase the volume of blood; and this adds to the heart-load. Shock is combatted in many ways, but normal saline solution and epinephrin, along with general measures, is the treatment used by many surgeons. This therapy is directed towards increasing the blood pressure and the volume of blood; and this adds to the heart-load. In treating hemorrhage and shock, the heart-load is augmented, whereas in heart failure the load is lightened. One can easily see the peril, of adding normal saline solution in cardiac failure. And according to Crile's theory, that shock is due to exhaustion of the vasomotor center, and that strychnine is a shock producing drug, one runs a risk by using strychnine in shock, as it further profounds the vasomotor exhaustion. The correct diagnosis in these conditions is of the utmost importance.

Physiology of the Circulation and Deductions Therefrom.—Study of the circulation brings out certain theoretical factors that might be of aid in the diagnosis of acute circulatory conditions. The heart, a muscular organ, possessing the property of contraction, gives the power (dynamic energy) necessary for the circulation of the blood. The arteries, a system of tubes, composed of connective tissue, smooth muscle, etc., possessing the properties of elasticity, extensibility and contractility, serve as channels for the circulation of the blood (potential energy). The veins, similar in structure to the arteries, convey the blood from the arteries back to the heart. In the arteries between the beats of the heart, there is a certain amount of pressure,—diastolic pressure. This pressure is dependent upon peripheral re-

sistance,—elasticity, extensibility and contractility of the arteries, —and the volume of blood. Each contraction of the heart forces blood into the arteries and increases the pressure to a certain extent—systolic pressure. This increase is known as pulse pressure,—systolic *minus* diastolic,—and measures the force of the heart contraction.

In exercise,[3] the systolic pressure is increased to a greater extent than the diastolic pressure, and necessarily the pulse pressure is greater (the heart has a reserve power which it calls upon). After prolonged exertion, the systolic falls more rapidly than the diastolic, and there results a low pulse pressure (Lowsley). In heart failure the disturbance points to the heart muscle, and one would infer that the systolic pressure would fall to a greater extent than the diastolic pressure, giving a decreased pulse pressure.

In hemorrhage, a condition affecting mainly the volume of blood, it would seem that the diastolic pressure would fall to a greater extent than the systolic pressure, so long as the heart receives a sufficient quantity of blood to work upon. The state of the circulation in hemorrhage might be compared to the state in aortic insufficiency. In aortic insufficiency, the relatively low diastolic pressure and large pulse pressure are well known. In each condition, there is a leak, so to speak, which affects the volume of blood and would change the diastolic pressure more than the systolic pressure, and would give an increased pulse pressure.

Shock is a depression of the vital powers arising from an injury or profound emotion acting on the nerve centers and inducing exhaustion or inhibition of the vasomotor mechanism (Da Costa); shock is exhaustion of the center (Crile). The circulation in a state of vasodilatation would seem to affect the diastolic pressure to a greater extent than the systolic pressure. As these pressures are lowered, the pulse pressure would be increased.

In other words, it would seem that by following cases likely to have heart failure, hemorrhage or shock, there would be a fall in the blood pressure in the acute state, that would be indicative of heart failure, when there is decreased pulse pressure, and of shock and hemorrhage, when there is increased pulse pressure. (Shock and hemorrhage can be differentiated by utilizing red blood cell counts and hemoglobin estimations, in following the case.—Hare).

The Scope of Our Work.—We thought it would be interesting to make systolic and diastolic readings, upon cases that might eventually have one of the above circulatory conditions. We hoped to ascertain the changes in blood pressure that would occur during such a state and were eager to know if the above theory would be borne out.

The scope of our work entailed much unnecessary labor, as we had to follow many cases, in order to obtain records of a few acute conditions. We endeavored to make readings at the same

hour daily, but this, owing to lack of time, was impossible. We made readings more frequently during the acute conditions.

In our work we used the auscultatory method, as described above, and read the diastolic pressure at the point where the clear, sharp tones of the third phase became suddenly and markedly dull,—the fourth phase. We would obliterate the pulse three times,—to allow for arterial spasm,—and then would read the pressure. We recorded the pulse rate at each observation.

Cases Showing Fall in Pressure with Decreased Pulse Pressure.—In our work we observed cases showing a fall in blood pressure associated with decreased pulse pressure:

Case 1.—H. H., age 42, dilated aortic arch, aortic insufficiency, myocardial insufficiency. Two days before death the systolic pressure rose to 172; diastolic pressure 46; pulse pressure 116 see Fig. 1*). In the next two days the systolic pressure fell to 82; diastolic pressure to 28; pulse pressure 54. The pulse pressure fell from 116 to 54.

Case 2.—S. P., age 23, female (malignant endocarditis), aortic insufficiency, mitral stenosis, mitral insufficiency, myocardial insufficiency. The day before death the systolic pressure rose to 122; diastolic pressure 36; pulse pressure 86 (see Fig. 2*). In the next twenty-four hours the systolic fell to 45; while the diastolic fell to 24; pulse pressure 21. The pulse pressure fell from 86 to 21.

These were definite cases of heart failure. The increase in systolic pressure, in both cases, just prior to death was very interesting, probably indicating the total heart power. When the limit of the heart power was reached, cardiac failure resulted and death soon followed.

J. G., age 59, arteriosclerosis, strangulated hernia. Before operation (see Fig. 3*) the systolic pressure was 152; diastolic pressure 90; pulse pressure 62. Thirty minutes after operation, while still under the effects of ether, the systolic pressure was 146; diastolic pressure 84; pulse pressure 62. Two days after the operation the systolic was 120; diastolic 90; pulse pressure 30. This shows pulse pressure change from 62 to 30 following the operation. The patient was very weak, but no other symptoms developed.

Mrs. H., age 56, fibroid tumor of the uterus. Before operation (see Fig. 4*) the systolic pressure was 210; diastolic 94; pulse pressure 116. Two hours after the operation, the systolic pressure was 154; diastolic pressure 88; pulse pressure 66. The pulse pressure fell from 116 to 66. The patient was very weak, but no other symptoms were observed.

We feel that the blood pressure findings in the last two cases indicated weakening of the heart, and that in such cases, normal saline solution and epinephrin are contraindicated.

*It has not been found practicable to print the figures.

Cases Showing Fall in Pressure with Increased Pulse Pressure.—Our cases that showed a fall in blood pressure with increased pulse pressure were hemorrhage cases.

D. H., age 21, typhoid fever. On Dec. 19 (see Fig. 5*), the systolic pressure was 120; diastolic pressure 90; pulse pressure 40. On Dec. 24 the pulse rate increased and the systolic pressure was 102; diastolic pressure 40; pulse pressure 62. The following day the stools contained much blood. The pulse pressure increased from 40 to 62.

M. D., age 66, hypertrophied prostate gland. The blood pressure findings are noted on separate chart (see Fig. 6*). After operation, the systolic and diastolic pressures fell, and there was a slight decreased pulse pressure. Then, in the course of one day the systolic pressure went up to 134, and the diastolic pressure to 112; pulse pressure 22. On the following day there was considerable hemorrhage from the prostatic cavity through the suprapubic incision. The systolic pressure rose to 144; whereas the diastolic pressure fell to 95; pulse pressure 49. The pulse pressure increased from 22 to 49.

We were unfortunate in not encountering any cases clinically diagnosed as shock. This we regret, as likewise the small number of cases we report. But we wish to call attention to this work, hoping that others might see fit to make observations along this line and eager to know whether our ideas regarding the circulation in heart failure, shock or hemorrhage will be proved or disproved.

Summary.—We believe that a fall in blood pressure associated with decreased pulse pressure is indicative of heart failure; whereas a fall in pressure associated with increased pulse pressure is indicative of hemorrhage or shock.

The cases that we have observed, seem to adhere to our theory.

Conclusions.—We realize that a large series of cases are necessary to prove our theory.

We feel that slight changes in the systolic and diastolic relation are not to be relied upon.

Cases should be observed frequently, in order that the state of the circulation be understood. Knowing the previous state of the circulation, a fall in pressure should be carefully studied, in order that proper interpretations of the changes be made.

We would urge that the systolic and diastolic blood pressure be taken on all surgical cases, before, during and after the operation. Such findings, in our opinion, might be of service in the diagnosis in circulatory crisis. We would further urge that blood pressure readings be made on all cases likely to have acute circulatory conditions.

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* It has not been found practicable to print the figures.

References.

[1]Korotkow, N.: *Vrach. Gaz.*, 1906, p. 128.
[2]McWilliam & Melvin: *Heart*, Vol. V, No. 2, 1914.
[3]Shumacker & Middleton: *Journal A. M. A.*, Apr. 11, 1914, p. 1136.

Dr. Claytor had listened to the paper with much interest. The writers had done their work at Garfield Hospital and he had had the opportunity to see some of the cases. Drs. Newman and Fischer deserved much credit for their work. The greatest interest to him attached to the diagnosis of hemorrhage; if the conclusions of the present authors are upheld by experience, the method advocated by them will be of the utmost clinical value. The authors of the paper had studied more particularly acute conditions; he himself had felt greater interest in the study of chronic conditions and is of the opinion that there is no more valuable method of arriving at a prognosis in such cases than by the study with the sphygmomanometer, especially in cardiovascular diseases.

Dr. Roy expressed the opinion that the work presented by the authors will stand the test of time; indeed, it seemed to him that they have almost marked an epoch with this work. They showed very well indeed a fact that has been known for several years: that there is a very low diastolic pressure in aortic insufficiency and this is suggestive of what has been here shown as true of hemorrhage, there being some similarities between the two conditions. Cabot, two years ago, said that it was a routine practice at the Massachusetts General Hospital to take the diastolic pressure, but that he didn't know why. Dr. Roy rather thought that Cabot will have occasion to change his mind about the importance of this routine in the face of the work here presented and similar work elsewhere. As a matter of fact, Dr. Roy thought that aortic regurgitation may be diagnosed by a study of the pulse and the pressure without even listening to the chest.

Dr. Lee added a word of congratulation to the authors of the paper. It was very encouraging for the future of medical science in America to find such fine quality of work done by hospital internes. In this connection he mentioned that the microorganism of typhus fever had only recently been isolated by a hospital interne in Mt. Sinai Hospital, New York. Dr. Lee was in agreement as to the probable validity of the conclusions of the authors upon the behavior of the blood pressure in hemorrhage and shock; and these conclusions were quite original in this line of work.

Dr. Williams said that it was formerly very common to glorify laboratory investigation at the expense of clinical observation; but we know that the things of the greatest value in medicine have come from the clinic and we should not let clinical study fall into desuetude. It may also be remarked that

many of the most acute observations have been made by young men, and not by the professors; this was often true, especially in France. As to the use of the shpygmomanometer in the cases here presented, he would suggest the possibility that the high preoperative pressure in some cases may be due to excitement.

It is not only in cases where we suspect circulatory disease, however, that we should take the blood pressure; in those cases which we label neurasthenia the use of the sphygmomanometer may reveal some surprising things. Often in so-called neurasthenia there will be found a surprisingly low pressure which is not insignificant—it means something.

Dr. A. B. Hooe had been much interested in the work of the authors; he had been much assisted by them in the management of some of his cases at Garfield Hospital. The surgeons as well as the clinicians may gain much by studying their patients in the way pointed out in the paper. He wished the studies had extended to the observation of pregnant women. High systolic pressure may be very significant in pregnant women, but we know nothing about the behavior of the diastolic pressure in this condition.

Dr. Chipman asked if the investigators had studied any cases during the administration of anesthetics? What he wished to know was if in prolonged operations with a falling blood pressure there is any given point of pressure which marks danger.

Dr. Frankland wished to join in the commendation of the paper. He asked if there had been any observations on the relation of the pulse rate to systolic pressure? He spoke of a case with systolic pressure of 85 or 90 mm. and pulse rate of 85; the patient died apparently of shock.

Dr. Newman said that the relation between pulse rate and pulse pressure had not been studied; nor had it been determined what is the danger point in falling pressure during prolonged operations. The suggestion had been made that preoperative high pressure may have been caused by excitement in several of the cases; in the cases reported there was a true increase of pressure independent of transient causes. The *antemortem* increase of pressure to be noted in some cases seemed to him to be due to a vain effort on the part of a good heart muscle to cope with valvular leaks; rapid exhaustion of the muscle results.

The methods suggested in the paper were applicable to those critical cases following operation where uncertainty arises as to whether we are dealing with heart failure, with hemorrhage or with shock; in these cases help of any sort is of value in solving the problem of proper therapy.

Dr. Fischer wished merely to add that in those cases in which with no change in the relative pressures, there is an increase of the pulse rate, this increase may be due to the excitement of anesthesia and need occasion no alarm.

FAITH CURES AND HOW THEY ACT, CONTRASTED WITH THE PRINCIPLES OF SCIENTIFIC MENTAL HEALING. WITH CASE REPORTS.*

By Tom A. Williams, M. B., C. M. (Edin.),

Washington, D. C.

Medical men as a whole have been notoriously unsuccessful in dealing with the kind of neurotic disturbances which were formerly called neurasthenia, neuroticism, hysteria, hypochondriasis and nervous breakdown.

In the treatment of these cases, it is often supposed that lay persons who profess to treat the mind are more successful. Regarding disorders of purely psychological causation this may have been the case at a time when their management by medical men was dependent upon the uncritical empiricism such as one still finds in the text books.

All of the descriptions of functional nervous disorders overemphasized the physical as against the psychical factors in their production, failing entirely to analyze the syndromes; and even where the disease was of physical origin, attributing too much importance to fatigue of the nervous system itself, and far too little to the factors outside the nervous system, of which the nervous disorder was a mere consequence. (See author's Syndrome of Adrenal Inadequacy. J. A. M. A., 1914.) Of course in these latter cases, lay therapy met with no better success than that of physicians, unless it took the form of physiological measures, such as were effected by modifications of diet, exercise, massage and bathing or stimulation of vital processes by electricity, the first four of which were grossly neglected by our profession, except in Germany.

But, where psychogenetic disorders were concerned, many lay systems of mental healing met with much success, because of their realization that it was the *psyche* and not the *soma* which should be attacked therapeutically. Over these, the few medical men who attempted psychotherapeusis showed no superiority, because their method consisted merely of an attack upon the symptoms† themselves by countervailing suggestions, indirect, direct or hypnotic, as determined by the practitioner's theories, or the patient's needs. Indeed, the layman's appeal was often superior because of its invocation of religion, mysticism or, at least, the shibboleths of a cult, which, by allaying the criticisms of reason, might make its suggestions more effective.

Those who see no more in psychotherapy than the suggesting

*Read before the Medical Society, January 28, 1914.
†See Errors in Neurological Practice, *Mo. Cyclo. Paed.*, July, 1914.

of the disappearance of symptoms must needs admit the inferiority of the medical man to many a charlatan in this respect; for the whole training of a medical man tends to breed intellectual honesty, whereas the whole process of suggestion hinges upon a side-tracking of a patient's attention while he is bamboozled into the acceptance of a new idea without opportunity for criticism or opposition. He is taken unawares by a subterfuge. And even although the end may seem to be for his good, at least, to a shallow reasoner, the whole procedure is out of tune with the habit of mind which has been trained by the observations and scientific induction upon which the true practice of medicine depends.

But real psychotherapy is not suggestion. The object of its practice is not merely to side-track an unpleasant thought or emotion; but to re-educate the patient's tendencies in a fruitful direction which will preclude reactions of disquieting or hurtful kind. The process can be most satisfactorily accomplished only when the practitioner has analyzed the psychic factors which enter into the disturbance. He does this, in order to have an understanding of the mental processes with which he will have to deal in reconstructing the patient's reactions to the surroundings which have initiated or are maintaining his psychosis.

The procedure may be very complex; but in principle it does not differ from the very simple conditioning, reconditioning, and deconditioning of autonomic reflexes practiced by Pawlow upon dogs in his experiments upon the functions of the digestive glands. For example: He changed the normal gastric flow reflex when a dog sees flesh into an inhibition of the flow even after eating. He did this by "conditioning" this reflex by the fear induced by showing a whip, of which the dog knew the use, each time he was fed. Again, he deconditioned this same reflex, thus restoring the flow of gastric juice to flesh in spite of the whip, by accustoming the dog to regard the whip as harmless.

The reverse process was accomplished by ringing a bell just before feeding time, by means of which the dogs began to secrete gastric juice at the ringing of the bell without any appearance of their meal. In ways like this, the secretions of the digestive glands could be modified at pleasure. Again, Cannon, by producing fear in cats so raised the output of the adrenals that blood from the vein of these organs would arrest completely, peristalsis in a frog's intestine. Crile caused death in rabbits by means of fear aroused in them by dogs.

The principle is one of associating with useful activities, which very often means social relationships, the pleasurable feelings for which the patient has substituted some distressing emotion. When this is accomplished, there ensues the spontaneous disappearance of the disagreeable feelings which are often at the root of nervous breakdown, thanks to a power of storing up impres-

sions in the human cortex in the form of ideas, the constant activation of which may thus interfere with proper social adaptation through their "association" into a painful complex.

The theoretical superiority of this method is amply confirmed practically in my clinical experience and that of many fellow psychopathologists.

The following cases are appended as illustrations of the kind of situation which may be met by modern psychotherapy. The actual demonstration of the procedure would require longer than the compass of this paper; and the cases presented are mere summaries. However, observations in greater detail have been set down, and many are already published. Those interested may refer to:

Contrast In Psychoanalysis, *Jour. Abnor. Psych.,* June, 1914; *New York Med. Jour.,* May, 1914; Studies of Writers' Cramp, *Jour. f. Neur. und Psychi.,* Leipsic, 1911; Multiple Cramps in a Psychasthenic, *New York Med. Jour.;* Successful Psychotherapy in Traumatic Neurosis, *Internat. Jour. Surg.,* 1909; Ten Cases of Hysteria, WASH. MED. ANNALS, Jany., 1912, *Post Graduate,* June, 1912; The Management of Juvenile Psychasthenia, *Amer. Jour. Med. Sci.,* Dec., 1912, and WASH. MEDICAL ANNALS, Nov., 1912; Psychogenetic Disorders in Childhood, *Jour. Abnor. Psychol.,* 1909, and *Post Graduate,* Sept., 1913; Psychoprophylaxis in Childhood, *Jour. Abnor. Psychol.,* 1909.

A medical man was placed for four years in a London asylum because supposed to be demented. Proper analysis showed me he was merely psychasthenic. He recovered in a few months.

A man metabolically disturbed, against advice, embraced Christian Science, resulting in undue optimism, rashness in business, failure and suicide.

A youth attempted suicide twice. In a sanitarium, he tried twice more. Less than two hours' analysis revealed the mechanism of his disorder and initiated a cure.

A girl of 15, sent from Pittsburgh, could not go to boarding school because of night terrors. Analysis for two weeks led to a cure within a month.

A lawyer had for years struggled against an intense fear, the source of which he did not know. A short analysis revealed its source, a nonsexual one, in childhood. He was restored to health within two weeks.

A banker whose engagement to marry had been broken lost forty pounds and could not concentrate at work. Reëducation cured him after an arduous struggle.

I have already related before this Society ten cases illustrating the rational therapy of hysteria (WASH. MED. ANNALS, 1912). Some of these forcibly exemplify the failure of empirical suggestions employed by physicians. There should be recalled Dr. Hardin's young woman from Warrenton, where the most em-

phatic suggestions by Dr. Maphes failed to influence an intolerable hyperaesthesia around the knees and arms; cured in one week by exercises based upon a rational understanding of the mechanics and psychology of the muscular contractions which caused the pains.

Some of you will recall Dr. Stone's case of Ilio-psoas spasm, which the removal of a diseased appendix failed to cure, but which was removed by two weeks of psycho-motor discipline.

It should not be necessary to again cite the striking success of rational psychotherapy in children; for the examples related last year (WASH. MED. ANNALS, 1913) where a single interview often sufficed, should be fresh in your minds. Nor should it be necessary to remind you that the psychotherapy of our day need not approach with diffidence the hitherto intractable occupational and traumatic "neuroses"; for principles were set forth so recently at the International Congress here, 1912, and the International Congress of Medicine, 1913.

But I wish to supplement these cases by another exemplifying the manner of treating hysteria in an older child, and of the more obstinate case of an older woman, and with two cases showing the perniciousness of unthinkingly referring to a sanitarium a patient in so grave a contingency as the persistent attempt to commit suicide.

[The full reports of these will be found in the author's paper when published.]

Dr. W. P. Carr felt sure that all present had enjoyed the paper. Much of it sounded like a fairy tale, but there was much fact in it. Dr. Williams really does cure some of these persons; and when Dr. Carr hears of these Sherlock Holmes methods, it makes him wish he had gone in for this specialty himself.

Dr. Jackson like Dr. Carr, would not attempt to discuss the paper. There was undoubtedly much fact in the paper, and Dr. Williams was able to do much good by his methods. In the case of the woman whose history Dr. Williams had given, there was no actual gastric disease, but she was obsessed with a fear of food, and it required Dr. Williams' ingenuity and patience to dissipate this fear.

Dr. A. B. Hooe had been interested in the case of the young man who had made repeated attempts at suicide. The patient had come into Dr. Hooe's care because he had known other members of the family; as soon as Dr. Hooe became aware of the nature of the case he advised that the young man be taken to hospital and that Dr. Williams be sent for. Dr. Hooe had himself tried to obtain the history of the young man's illness and signally failed. Dr. Williams, however, at his first visit quite won the patient's confidence and obtained the entire history. Dr. Hooe had remained at this first interview and had been much

impressed by the apparent ease with which a properly conducted examination of such a patient will bring to the surface underlying psychic disturbances. Once the etiology of the disturbance was made clear, the results of treatment were truly marvelous.

Dr. Hagner had been interested in the case of the young man who had a psychic disturbance growing out of love sickness. Only about two visits were necessary for Dr. Williams to secure the patient's entire confidence; and a complete cure was speedily effected.

Dr. E. L. Morgan said that there was nothing new under the sun; the evolution of the same human needs and the efforts of man to meet those needs had brought us to modern psychotherapy. It was a well known fact that the heathen of all ages had worked miracles by the aid of demonology; the Christian fathers adopted the same practices under better guises. All the changing modes of mental healing depended upon the faith of the subject in the power of the healer or what the healer represented. In this matter it seemed to Dr. Morgan that the medical profession needed some mental healing itself.

Dr. A. F. A. King wished to join in the commendation of the paper and in congratulating ourselves upon having a competent neurologist like Dr. Williams in the community. Dr. King had been struck by the fact that Dr. Williams in his treatment of his patients had used the two things upon which all civilization depends: namely, imagination and language. His remedy was words—so impressed upon the imagination of the patient as to change the mode of thought. Now as to hypnotism; the hypnotic state is brought about by the use of the same weapons, imagination and language. The hypnotized subject is told that something pertaining to himself is true, and to his imagination it is true. He must be made to believe, by words, that the hypnotizer has the power to hypnotize. Without this previous belief on the part of the patient, the hypnotizer would have no power to hypnotize.

Dr. Macatee had observed some expressions of incredulity and amusement in the audience during the reading of the paper and it seemed to him somewhat indicative of a rather general attitude of the profession toward psychotherapeutic endeavors and possibilities. Much of this feeling among doctors depends, it seemed to him, upon an unfamiliarity with the terminology of psychology and psychotherapy, and this unfamiliarity depended largely upon a failure to make use of the two weapons of civilization mentioned by Dr. King, language and imagination. If a due regard for derivation and exact definition of words were had, and if the language of the psychologist were received with imagination, using the word in its proper sense—to picture the idea expressed by the words, then it would be realized that much of the apparent complexity of psychology may be resolved into

simplicity and it would be seen that the art of the psychotherapeutist is largely the intelligent application of common sense. The general practitioner is thus deterred by "the deadly inertia of the unfamiliar" from attempting the understanding and relief of many of the psychoneuroses which appear in the clientèle of every doctor.

Dr. Williams expressed his thanks for the kind words spoken in the discussion of his paper; he was glad the debate had taken the form of an experience meeting. He wished to insist that psychotherapy is not a species of faith cure; the patients come to the psychotherapeutist without any faith; they have usually thrown up the sponge. Although they had a most sublime faith in the family doctor, the family doctor did not cure them, because he did not know how. The cases sounded like fairy tales only on account of the rapidity with which they get well. They get well rapidly because Dr. Williams works rapidly; it is temperamental; he can't work any other way without becoming exhausted. He agreed with Dr. Carr in regretting that that gentleman had not become a neurologist; he had the right kind of mind; it simply happened that when Dr. Carr studied medicine there wasn't any neurology worthy the name. Dr. Jackson's case was one that the older neurology would have called hypochondriasis. In Dr. Hooe's case the first analysis required an interview of an hour and a half, but the one interview sufficed to reveal the mechanism of the disorder. The cure was accomplished not by suggestion, but simply by the use of good sense, not yet common. Dr. E. L. Morgan had spoken of the practices of demonology, of Indian healers, and the like as variations of a single system of mental healing of which psychotherapy is a part. The practices of the sort mentioned by Dr. Morgan were not methods of common sense and had nothing in common with modern psychotherapy.

Dr. Williams had been obliged to leave many instructive cases out of the paper because of social considerations; perhaps later it might be safe to speak of them. Dr. King had spoken of language and imagination as the weapons of psychotherapy; Dr. Williams preferred to call his weapons understanding and sympathy. Dr. King had also asked about hypnotism; there was nothing in hypnotism but an emphatic form of suggestion, as even Bernheim has recently conceded. Dr. Macatee had made an appeal for the application of these methods in the work of general practitioners; actually there are in this Society several practitioners already who are using the methods in their everyday work, and who are using them successfully and well. When a majority of doctors do so there will be little left of religious healing cults except among persons of poor intelligence.

PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Stated Meeting, Wednesday, May 6, 1914.—Vice President R. T. Holden presided; about 65 members present.

The Treasurer reported for April, receipts, $74.00; disbursements, $296.66.

The following proposed amendment to the Constitution, introduced by Dr. Mackall at the March stated meeting, was reintroduced for consideration at the November stated meeting:

Amend Art. V, Sec. 4, as follows: Add "That all applicants who are not elected at the next stated meeting following the stated meeting in which their names are presented shall be debarred from making further application for membership in the Medical Society of the District of Columbia for two years."

The following applicants for membership were proposed and their applications referred to the Committee of Censors:

For active membership: William Brown Carr, George Washington University, 1907; P. Edward Larkin, Georgetown University, 1908; Boyd Richard Read, George Washington University, 1912; Davenport White, College of P. and S., N. Y. City, 1905.

For associate membership: William C. Braisted, Surgeon General, U. S. N., 2158 California Street; Hugh McCormick Smith, U. S. Commissioner of Fisheries, 1209 M Street; Edward Melville Talbott, Captain, M. C., U. S. A., 1627 16th Street.

An appropriation of $43.41 for expenses of the office of the Corresponding Secretary was granted.

Dr. Frank Leech, for the Committee of Censors, reported that the committee recommended for election the following:

For active membership: Everett Monroe Ellison, George Washington University, 1912; Frank A. Hornaday, George Washington University, 1910; Arthur Bickle Little, Georgetown University, 1912; Benjamin Newhouse, University of Maryland, 1912; Albert Elwood Pagan, George Washington University, 1912; Fred Repetti, George Washington University, 1906.

For associate membership: Dean Childs Howard, Major, M. C., U. S. A., 1720 H Street, N. W.; Leland Ossian Howard, Chief of Bureau of Entomology, Department of Agriculture, 2026 Hillyer Place.

All the foregoing were duly elected.

Dr. Arthur H. Kimball reported a Case of Voluntary Displacement of the Eye, with presentation of patient. Discussed by Drs. Dufour, Davidson and Kimball. See page 299.

Dr. Heitmuller offered the following amendment to the Constitution: "Amend Article VI, Section 5, by striking out, in the

last line, the word two and substituting the word four." Referred to the Executive Committee.

Dr. I. S. Stone reported a Case of Intestinal Adhesions. See page 288.

Dr. Truman Abbe read the paper for the evening. Title: The Early Diagnosis and Treatment of Cancer. Discussed by Drs. Dufour, W. P. Carr, Randolph, Thomson, Lochboehler and Abbe. See page 279.

Wednesday, May 13.—Vice President Holden presided; about 65 members present.

Dr. S. S. Adams said that it had been represented to the staff of the Children's Hospital that there had been complaint on the part of some members of the Society against that hospital for alleged treatment of patients not in indigent circumstances; he invited any members feeling aggrieved to file their complaints with the staff of the hospital, to the end that actual causes therefor may be remedied.

Dr. D. S. Lamb stated that the Army Medical Museum had recently acquired a lungmotor; there being a few of these apparatuses in the city, the Curator of the Museum will be prepared to allow the use of the lungmotor by any responsible member of the Society having a suitable case for it.

A vote of thanks was given to the Curator of the Army Medical Museum.

Dr. D. S. Lamb exhibited specimens of Hair-balls removed from the stomachs of animals. Discussed by Drs. Selby and Roy. See page 300.

Dr. John Hunter Selby reported a case of Mediastinal Abscess, diagnosed by means of roentgenograms, and exhibited the plates.

Drs. H. H. Newman and M. B. Fischer read the paper for the evening. Title: The clinical relation of systolic and diastolic pressure in the diagnosis of certain acute circulatory conditions. Discussed by Drs. Claytor, Roy, Lee, Williams, A. B. Hooe, Chipman, Frankland, Newman and Fischer. See page 310.

Wednesday, May 20.—Vice President Holden presided; about 65 members present.

The following preamble and resolution adopted by the Washington Surgical Society were read and referred to the Executive Committee:

"*Whereas*, the value of Hospital Efficiency Committees appointed by the profession has been shown in other communities, and whereas it is reasonable to believe such a committee would be a benefit to the profession and their hospitals in the District of Columbia,

"*Be it resolved*, That the Surgical Society recommends to the Medical Society of the District of Columbia that it give its consideration to the project with a view to determine the advisability of appointing a special committee to secure all necessary data and report these to the Medical Society."

Dr. Henry D. Fry reported the following cases:

1. Asphyxia pallida (neonatorum) successfully treated with the infant pulmotor. Discussed by Dr. A. L. Hunt.

2. Malaena neonatorum successfully treated by injection of normal human serum. Discussed by Dr. J. J. Kinyoun.

Dr. Wm. L. Clark, of Philadelphia, read the paper for the evening. Title: Dessication surgery; illustrated with lantern slides. Discussed by Drs. Kober, Selby and Clark.

Wednesday, May 27.—Vice President Holden presided; about 60 members present.

Dr. H. C. Macatee, for Committee on Red Cross Medical Work, reported that in compliance with a request from the Red Cross the committee had circularized the Society for volunteers for Red Cross service in Mexico if the need should arise, and had furnished the Red Cross officials with a list of physicians who will hold themselves in readiness for this service. The committee had incurred an expense of $9.60 in doing this work, for which an appropriation was requested. The appropriation was granted.

The President was authorized to approve bills arising during the summer recess for publication of the MEDICAL ANNALS.

The Treasurer was authorized to pay $3.98, expenses of corresponding Secretary, and to make other necessary expenditures during the summer recess.

Drs. Selby and Neill reported a case of Cholelithiasis; x-ray plates exhibited. Discussed by Drs. Groover, Wolfe, A. B. Hooe, Selby and Neill.

Dr. D. G. Smith read an essay. Title: Hay Fever. Discussed by Drs. Bowen, L. O. Howard, O. Wilkinson, Macatee, Lochboehler, Davidson and D. G. Smith. See page 289.

Dr. C. S. White read a paper. Title: The Value of Post-operative leucocyte counts. Discussed by Drs. Macatee, Chappell, Davidson and White. See page 302.

Thursday, July 23.—Special meeting. Vice President Holden presided; about 90 members present. Meeting called to consider the action of the President of the United States in the case of Dr. T. J. Kemp. The matter was referred to the Executive Committee.

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Editorial.

HISTORY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

THE WASHINGTON MEDICAL ANNALS, the official organ of the Medical Society of the District of Columbia, issued the first of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

ALUMNI MEDICAL SOCIETY OF GEORGETOWN UNIVERSITY. Active membership of 110; meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

CLINICAL SOCIETY.—Officers: D. W. Prentiss, President; F. L. Biscoe, Vice President; W. J. Mallory, Secretary-Treasurer; Censors: L. A. Johnson and J. D. Thomas.

Meeting place.	*Essayist and Date of meeting.*	*Discussion by.*
Dr. Wells	Dr. Clark	Dr. J. B. Nichols
The Rochambeau	October 12	
Dr. Barton	Dr. Mallory	Dr. W. E. Clark
1730 Conn. Av., N. W.	November 9	
Dr. Reichelderfer	Dr. J. D. Thomas	Dr. Hurtt
1721 Conn. Av., N. W.	December 14	

Clinico-Pathological Society.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership after 15 years. A limited honorary membership of eminent medical men. Meets on the first and third Tuesdays of the month from October to May, inclusive. Officers: President, B. L. Hardin; Vice Presidents, Thos. S. Lee and Wm. Earl Clark; Secretary and Treasurer, B. M. Randolph.

Freedmen's Hospital Medical Society. Meets on the second Wednesday of each month from October to May, inclusive. Composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

Galen Society of the District of Columbia.—Business meeting and President's address, Oct. 19, at Dr. Kearney's, 1229 O Street.

David W. Tastet, President; Carl Henning, Secretary.

Georgetown Clinical Society; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

Hippocrates Society, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year: L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

Medical History Club of Washington, D. C. Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H. W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig.

Medical and Surgical Society of the District of Columbia.—President, H. P. Parker; Vice President, D. P. Hickling; Secretary and Treasurer, L. Eliot; Recording Secretary, L. C. Ecker; Executive Council, A. R. Shands, O. A. M. McKimmie, L. Eliot, E. P. Copeland and L. H. Reichelderfer.

Society of Medical Jurisprudence, Washington, D. C.—President, Dr. Wm. A. White; Vice President, R. Ross Perry; Secretary-Treasurer, Dr. D. P. Hickling. Meets on the second Monday of each month from October to June at University Club. Has from forty to fifty members.

Society of Ophthalmologists and Otologists, Washington, D. C., meets the third Friday of each month from October until May, inclusive.

Officers: President, L. S. Greene; Vice President, A. B. Bennett, Jr.; Secy.-Treasurer, A. H. Kimball, The Farragut.

Active members: Drs. A. B. Bennett, Jr., J. W. Burke, V. Dabney, W. T. Davis, L. S. Greene, C. Henning, E. B. Jones, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. B. Mason, M. E. Miller, Mead Moore, S. B. Muncaster, W. S. Newell, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive members: Drs. J. H. Bryan, W. K. Butler, H. S. Dye, Wm. H. Fox, W. P. Malone, H. A. Polkinhorn, C. W. Richardson, D. K. Shute, W. H. Wilmer.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

Walter Reed Medical Society meets on the fourth Thursday of every other month, from September to May inclusive. Composed of physicians located in the eastern part of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

Washington Society of Nervous and Mental Diseases. President, Tom. A. Williams; Vice President, W. M. Barton; Secretary, W. H. Hough. The Society has a limited member-

ship but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. Meets monthly on the third Thursday at the Cosmos Club or a member's residence.

WOMEN'S MEDICAL SOCIETY of the District of Columbia President, Sophie Nordhoff-Jung; Vice President, Ada R. Thomas; Secretary and Treasurer, A. Francis Foye; Corresponding Secretary, Margaret R. Stewart.

THE SECRETARIES of the other Medical Societies of this District are reminded that the ANNALS will publish the schedules of their meetings.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

CONSERVATION OF VISION, &c.—The Council on Health and Public Instruction of the A. M. A. has published and has for sale the following pamphlets, which may be obtained at the prices stated and from the office of the Association, Chicago:

1. School children's eyes; by Frank Allport.
2. Industrial and household accidents to the eye; by Harold Griffith.
3. Wearing glasses; by W. B. Lancaster.
4. Relation of illumination to visual efficiency; by E. M. Alger.
5. Trachoma in eastern Kentucky; by J. A. Stucky.
6. Auto-intoxication and the eye; by H. D. Burns.
7. Eye-strain; by Hiram Woods.
8. Lenses and refraction; by Frank Allport.
9. The eye and its functions; by Frank Allport.
10. Care of the eyes; by Frank Allport.
11. Child culture the function of organized medicine; by H. P. Favill.
12. Control of cancer; by J. C. Bloodgood.
13. Municipal regulation of milk supply; by E. O. Jordan.
14. Death and blindness from methyl or wood alcohol poisoning, with means of prevention; by C. A. Wood.

All the above are excellent, suitable for patients and others; the names of the authors are sufficient guarantees.

EMBRYOLOGICAL STUDY.—Drs. F. P. Mall, Professor of Anatomy, Johns Hopkins, and H. M. Evans, Research Associate, Carnegie Institution, make an appeal for human embryos. An appeal to physicians and surgeons to send such material as opportunity affords. So far over 800 specimens have been received,

and on these more or less over 100 papers have been published. All material passed in abortions; if the embryo or fetus is not apparent, the tissue fragments may contain the ovum, and are desirable. Tubal pregnancies, if possible unruptured. Pregnancies *in situ* removed for malignant diseases or otherwise. Curettings before the menopause, if one or more periods have been passed. The specimen should as soon as possible be placed in 10 per cent. formalin and the bottle should be filled up to avoid shaking. Address either Dr. Mall or Dr. Evans, Johns Hopkins Medical School, Baltimore. If the contributor has not the conveniences, Dr. D. S. Lamb, of the Army Medical Museum, will undertake the care and transmission.

The American Journal of Surgery, beginning with the October issue and quarterly thereafter, will publish a 32 page supplement devoted exclusively to Anesthesia and Analgesia.

Boards of Commissioned Medical Officers will be convened to meet at the Bureau of Public Health Service, 3 B Street, S. E., Washington, D. C., and at the Marine Hospitals of Boston, Mass., Stapleton, N. Y., Chicago, Ill., St. Louis, Mo., New Orleans, La., and San Francisco, Cal., on Monday, October 19, 1914, at 10 o'clock A. M., for the purpose of examining candidates for admission to the grade of Assistant Surgeon in the Public Health Service, when applications for examination at these stations are received in the Bureau. For invitation to appear before the board of examiners, address "Surgeon General, Public Health Service, Washington, D. C.

Refraction.—We have been asked to publish the following:

"We are very anxious indeed to stimulate our readers to take up the practice of eye refraction; and we are convinced, after a careful investigation, that the Ophthalmo-Axonometer, made by the Standard Optical Company, of Waupaca, Wisconsin, which we have mentioned more than once in our pages, and which is advertised in this number, offers the general practitioner just the means he requires for doing this work simply and easily.

"We have, therefore, for the benefit of our readers, made an arrangement with the Standard Optical Company by which they will furnish these instruments at a special club rate to fifty or more readers of *Clinical Medicine*. The list price is $58.80. Under this special arrangement, they will be furnished at the very generous price of $40.00, which can be paid at the rate of $10 down and $5 a month thereafter.

"If you wish to avail yourself of this opportunity, send in your order at once TO US, and we will see that it is taken care of. Or, if you wish further information about the instrument, write us and we will see that you receive attention. Remember, the offer depends upon a club of fifty or more—and you must be one

of the fifty. Act promptly if you wish to get in on it. Address The American Journal of Clinical Medicine, Ravenswood Station, Chicago, Ill."

THE AMERICAN ROENTGEN RAY SOCIETY will meet in Cleveland at the Hotel Hollenden on September 9th to 12th, inclusive, 1914. The program promises to be of unusual interest and value, and includes a paper by Dessauer of Frankfort, on the subject of artificial production of gamma rays; Coolidge, the inventor of the Coolidge tube, Shearer and Duanne will also read papers. The subject of deep therapy and the production of the hard rays will be fully presented and discussed. The rest of the program will be taken up by a large number of papers on general subjects. The medical profession is cordially invited to attend these meetings.

THE TRAVEL STUDY TOUR of the Travel Study Club of American Physicians to the A. M. A. meeting, San Francisco Exposition, Honolulu, Japan, the Philippines, China, and around the world, 1915. Those interested address the business manager of the McCann's Tours, 1328 Broadway and 34th Street, N. Y. City.

DR. VALENTINE MCNALLY of this Society died in this city August 8, 1914. He was a retired army officer. He joined the Society November 13, 1867. His biographical sketch will be found on page 288 of the History of the Society, and his half-tone, opposite page 89.

DIGALEN, one of the proprietary drugs on the market, has been removed from the list of N. N. R. of the Council of Pharmacy and Chemistry of the A. M. A.

THE VIRGINIA MEDICAL SOCIETY will meet in Washington October 27 to 30, 1914.

THE WASHINGTON EYE, EAR AND THROAT HOSPITAL, 4 Iowa Circle, has made its first Annual Report. The hospital was founded May 1, 1913. During its first year there were 326 clinical cases, 2,665 clinical visits, 207 operations, and 110 house patients; total patients 436. The President is Rev. J. F. Prettyman; Secretary, J. T. K. Plant; Treasurer, Wm. McNeir. The medical and surgical staff consists of Drs. Oscar Wilkinson, Executive Surgeon, S. B. Pole, J. B. Hunt, D. W. Tastet, Murray Russell and E. T. Stephenson; Bacteriologist, O. C. Cox; Anesthetists, Thos. Lowe and A. L. Hunt; Consulting Staff, Drs. W. M. Barton, W. P. Carr, O. H. Coumbe, C. R. Luce, P. S. Roy, H. L. Taylor and C. S. White.

The Board of Governors announces that the hospital has a modern operating room, twelve beds and a daily dispensary service, and is open to inspection at all times and invites the profession to patronize it.

REVIEWS.

HOSPITAL OF THE PROTESTANT EPISCOPAL CHURCH IN PHILADELPHIA. Medical and Surgical Reports, Vol. II; Philada., 1914, pp. 427; many illustrations. This book contains the plan and perspective views of the hospital, statistics for 1913, and a series of 44 papers, mainly surgical. During the year 1913 there were 5,319 admissions into the hospital, and 31,656 patients were treated in the dispensary. The expenditures amounted to $290,050.83. There were 24,291 examinations made in the pathologic laboratory. There are 18 resident physicians.

D. S. LAMB.

RECENT PUBLICATIONS OF PHYSICIANS OF THE DISTRICT OF COLUMBIA.

J. W. Bovée; Complete sterilization of skin by iodine; *Amer. Jour. Obstet.*, July.

W. P. Carr; Fundamental principles in the treatment of fractures; reprint by Amer. Med. Publis. Co., New York.

T. A. Claytor; Historic review of angina pectoris; *West Va. Med. Jour.*, June, page 7.

C. R. Dufour; Insanity from a medical standpoint; *Va. Med. Semi-Mo.*, August 7, page 209.

W. A. Duncan, U. S. A.; Roentgen ray equipment and work in army at present time; *Amer. Jour. Roentgen.*, April 1.

L. Eliot; A case of reflex neurosis; *Va. Med. Semi-Mo.*, Aug. 7, page 224.

W. A. Frankland; Simple method of testing renal function with pheno-sulphone-phthalein; WASHINGTON MEDICAL ANNALS, March, page 143; abstracted in *Mo. Cyclop. and Med. Bull.*, June, page 368.

B. Glueck; Head injury and syphilis as cause of crime; Bull. Amer. Acad. Med., June.

M. C. Hall; Unusual case of fatal poisoning from the administration of male fern as a vermifuge; *Jour. A. M. A.*, July 18, page 242.

H. H. Hazen; Industrial skin diseases; *Jour. Cutan. Dis.*, July; also, Syphilis in the American negro; *Jour. A. M. A.*, August 8, page 463.

A. F. A. King; Chronic irritation and fertilization of epithelial cells by sperm, the conjoint cause of cancer; WASHINGTON MED. ANNALS, March, page 113; abstracted in *Jour. Med. Soc. New Jersey*, July, page 377.

L. Kolipinski; Cardiac headache; *New York Med. Jour.*, August 1; abstracted in *Jour. A. M. A.*, August 15, page 607.

D. S. Lamb; Polyposis gastrica; WASHINGTON MED. ANNALS, May, page 180; abstracted in *Buffalo Med. Jour.*, August, page 59.

J. E. Lind; Diagnostic pitfall in mental examination of negroes; *N. Y. Med. Jour.*, June 27.

M. D. Magee; Gastro-duodenal ulcer; *Va. Med. Semi-Mo.*, August 7, page 221.

W. J. Mallory; Gastric hypertony and gastro-enterostomy; *Jour. A. M. A.*, June 13, page 1883; abstracted in *Jour. Kansas Med. Soc.*, July, page 283.

J. R. Mohler; Cerebro-spinal meningitis (forage poisoning); Bull. U. S. Dept. Agricult., No. 65, Feb. 14, page 1.

J. R. Mohler and A. Eichhorn; Immunization tests with glanders vacine; ditto, No. 70, April 15, page 1.

J. R. Mohler, A. Eichhorn and J. M. Buck; The diagnosis of dourine by complement fixation; *Jour. Agricult. Research*, Nov., 1913, page 99.

H. J. Nichols, U. S. A.; Observations on the pathology of syphilis; *Jour. A. M. A.*, August 8, page 466.

C. A. Pfender; Autoserotherapy in sero-fibrinous pleurisy; WASH. MED. ANNALS, March, page 83; abstracted in *Mo. Cyclop. and Med. Bull.*, July, page 417.

B. H. Ransom; Cysticercus ovis the cause of tapeworm cysts in mutton; *Jour. Agricult. Research*, October, 1913, Vol. I, page 15, Fig. 1 to 13, plates 2 to 4.

G. B. Roth; Pituitary extract, an examination of some commercial preparations made from the posterior lobe of pituitary body; *Jour. A. M. A.*, August 8, page 476.

W. C. Rucker, P. H. S.; The necessity for establishing a national leprosarium; same journal, July 25, page 297.

A. R. Shands; Osteosarcoma of humerus following fracture; WASH. MED. ANNALS, March, page 141; abstracted in *Jour. N. J. Med. Soc.*, July, page 344.

W. H. Smith and N. T. Kirk, U. S. A.; Foreign body in the submaxillary gland; *Jour. A. M. A.*, August 1, page 403.

Camp Stanley; Mould fungi, streptothrix foersteri, recovered from the gastric contents; same journal, July 11, page 162.

C. W. Stiles; Certain medical aspects of the alien race problem; *S. C. Med. Assn. Jour.*, June.

E. W. Titus; Cow's milk, raw and treated; *Med. Record, N. Y.*, July 11.

J. L. Verbrycke; Ulcer of lesser curvature; same journal, August 1.

F. J. Winant; The importance of tuberculin testing the dairy herd; *Va. Med. Semi-Mo.*, July 10, page 171.

PERSONAL NOTES.

Drs. J. H. Bryan and C. W. Richardson attended the annual meeting of the American Laryngological Association at Atlantic City May 25 to 27, and took part in the discussions.

Dr. G. F. Clark, U. S. Navy, has been detached from the Naval Medical School to the *Michigan*.

Dr. C. L. Davis was married August 19 at Danbury, N. H., to Miss Sadie Harriman Wells Edson.

Dr. C. R. Dufour read a paper on "Insanity from a medical standpoint" at the meeting of the Shenandoah County Medical Society at Woodstock, Va., in June.

Dr. L. C. Ecker was married June 16 to Miss Marguerite Fitch Wells of Brooklyn, N. Y.

Dr. Francis E. Harrington has been appointed Epidemiologist in the Public Health Service.

Dr. P. L. Jones, U. S. A., has been ordered to Walter Reed Hospital.

Dr. Herbert E. Martyn was married August 21, to Nellie May Pulman, of Alexandria, Va.

Dr. James Edward Nelson, Georgetown, 1895, for many years a member of the Board of Medical Examiners, Pension Bureau, died in this city July 22.

Dr. R. C. Ransdell, U. S. Navy, was married July 15 in New York City to Miss Dorothy Abbott Layman of Indianapolis, Ind.

Dr. C. W. Richardson, by invitation, read a paper on "Congenital occlusion of the posterior nares" before the Clinical Congress of Surgeons of North America, in London, in August.

Dr. E. M. Shipp, U. S. Navy, has been ordered to the Bureau of Medicine and Surgery, Navy Department.

Dr. L. H. Taylor was reëlected Secretary of the American Therapeutical Society at the annual meeting May 29 and 30, at Albany, N. Y.

Dr. W. A. Wickline, U. S. A., has been transferred from Walter Reed Hospital to Jefferson Barracks, Mo.

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WASHINGTON
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SANITATION IN ANCIENT CIVILIZATIONS.*

By D. S. Lamb, A. M., M. D., LL. D.,
Washington, D. C.

Early sanitation; the establishment of conditions favorable to health by nations in their early history. It might be called ancient sanitation except for the difficulty of drawing a line between ancient and modern. The word ancient has been specifically applied to the period before the fall of the Roman Empire. Then came the middle ages and then what we call modern times. The beginning of the historic period varies much for different nations. For Egypt it would be between 11000 and 6000 B. C.; for China about 5000 B. C.; for Babylonia about 4500 B. C.; for India about 4000 B. C.; for the Hebrews about 2000 B. C.; for Greece, 1235 B. C.; for Japan about 1000 B. C.; for Rome 755 B. C.; while for the nations of the Americas it would be somewhere within the Christian era. In spite, however, of these differences in date, the character of all their beginnings was probably much the same, because human necessities, life, health, food, clothing, shelter, would differ but little except as influenced by climate or geographical position.

Sanitation is either personal or public. The two are closely related. Under the head of personal sanitation would come preferably the subjects of buildings, cleanliness generally, including bathing, food and cooking, diseases and their prevention, environments, exercise, heating and lighting, occupation, latrines and sinks, sleep, temperance, ventilation. Under the head of public sanitation would come preferably abattoirs, air, engineering, forests, garbage and offal, gases, noise, parks, sewers, streets, and water supply.

This is a long list of subjects and they cannot all be separately considered in this paper; in fact, for some of them, sleep and noise for instance, although subjects of great sanitary importance, I have no testimony to offer as to whether any people in its early history took any measures to promote sleep or lessen noises.

*Read before the joint meeting of the Anthropological Society of Washington and the Medical Society of the District of Columbia, October 21, 1914.

To the individual and his family health is very important; it means for him earning power, by which he and his family are supported. If his earning power is diminished or destroyed it means that in most cases he and his family become more or less dependent on other persons or on the community.

The need of sanitation is especially shown by the histories of epidemics. The plague of Athens, 430 to 425 B. C., as told by Thucydides and Lucretius; the plague of Justinian, 542 B. C.; the plague in Italy, in 1348 A. D., as told by Boccacio and Manzoni; the Black Death of the fourteenth century, in which, it is said, twenty-five million persons died; the plague in London in 1665, described by Defoe, in which 70,000 died; the plague in India from 1885 to 1889, in which 250,000 died; the typhus fever in Ireland following the great famine 1816 to 1819, in which 800,000 were sick; the nearly two million cases of dysentery with nearly 50,000 deaths in the Union Army during the Civil War; and in the same army 80,000 cases of typhoid fever, with 30,000 deaths. Smallpox has destroyed whole tribes of people; measles destroyed the greater part of the inhabitants of the Feejee Islands. We rarely have epidemics now on an extensive scale, because we have learned that all of them are due to animal or vegetable germs that we can to a great extent control.

I will first make some general statements in regard to the principal nations and afterwards consider a few particular kinds of sanitation.

Herodotus, who wrote about 450 B. C., after traveling over much of the then known world, has given us much information in regard to ancient peoples, and his statements, though sometimes criticized, are in the main accepted, in the absence of other reliable information. He tells us that in Egypt it was customary for the people to take a purge every month, on three successive days, as a preventive of disease; and also to use emetics and enemata. The priests when on duty in the temples shaved the body every third day so that no vermin nor other impurity could be found in them. The people paid attention to clothing, their habitations and gymnastics, and practiced the purification of the air by fumigations which they used especially in epidemics. The clothing generally was of coarse linen cloth with papyrus shoes. The priests concerned themselves with the public health. Children were educated to endure fatigue and to live with the greatest frugality.

The Chinese bathed and used massage; and as far back as 2500 B. C. used medical gymnastics. In Japan attention is said to have been given to sanitation as early at least as 1000 B. C., at which time a sanitary officer was appointed. In India it was a custom to take an emetic once a week and a laxative once a month; and venesection was done twice a year. Hammurabi was

the first king of the Babylonian empire, and he devised, in 2250 B. C., a code of laws that goes by his name and was the law of the empire for 2000 years. It does not contain anything in regard to sanitation, but does prescribe the fees to be paid to physicians. The Persians, under the law of Zoroaster (2500–2000 B. C.), had a politico-religious system; they tried to make infants healthy by requiring them to endure hunger, thirst and exposure.

It is stated that among the Aztecs hygiene, both public and private, reached a comparatively high plane.

In Greece generally the food was simple and the clothing adapted to the climate. The houses were mostly in the form of a parallelogram, the public rooms opened on the streets, the sleeping rooms at the back, the store rooms, stables and servant rooms arranged around the sides. In the center was a courtyard, which also served for ventilation. The buildings were never very high. In one corner of the court was the well or cistern. The hygiene was mainly a copy of that of the Egyptians adapted to the climate and religious beliefs. Greece improved on the Egyptian in some respects, as in gymnastics. Nothing was neglected to encourage these exercises. The women of Lacedemonia, until they married, exercised, as did the men. Such women had robust children.

The need for soldiers and the fact that the fighting was usually individual explain the encouragement of athletics, especially among the Spartans. When a male child was born he was exposed to public view, and if found deformed or weakly was put to death. When seven years old a boy was sent to the public classes, where he was taught gymnastic games, and was compelled to endure hardships and suffering. At 30 years he could marry. At 60 years he was released from state discipline and military service. He was taught obedience.

Old Rome had regulations for the height of houses and width of streets, for places of amusements, public parks, and walks. Much of the food was inspected; meat was one of the things. There were physicians to the poor, called *archiatri populares,* the first to pay them salaries was Alexandrus Severus, 200 A. D. The streets were well paved, raised in the center so that the water flowed toward the sides. The houses were built so that there was much natural ventilation; an interior court; shutters to close the windows. Rooms were sometimes heated with hot-water pipes from furnaces. Chimneys were unknown. There were many apartment houses; in the time of Theodosius, 350 A. D., there were in Rome 48,382 houses, of which 46,602 were apartment houses, called *insulae caenicula;* an estimate of 25 persons to each house. Artisans were not allowed to poison the air with the emanations from their workshops; the fullers were required

to carry on their calling outside the gates, or in remote parts of the city.

Plutarch, who lived in the time of Trajan, 50 A. D., wrote on the subject of "Regimen for the higher classes," especially advocating temperance and regular exercise; he opposed the habitual use of emetics, and advocated that mothers should, if possible, nurse their babies, or, failing that, should get good wet nurses. To attain old age he recommended sobriety and continence.

Galen, in the first century A. D., is said to have been the first to systematize hygiene. He held that mothers should nurse their babies until about the end of the second year; that the baby should be washed every morning, but was opposed to plunging it in cold water. He recommended that its body should be powdered with salt to harden the skin and fortify the health. The mother should not give wine to the baby. He considered old age as a disease, and advised a stimulating diet, daily massage, to keep up the heat and help the movement of the blood, and daily exercise within the point of fatigue. He said that the old should avoid constipation and should not sleep too much. The influence of Galen was nearly world-wide and lasted till the middle of the 13th century.

Gymnastics with the Romans was military.

Probably the most interesting history in early hygiene is that of the Hebrews. It appears from the scriptural record that Moses, the great leader of the Hebrews, fortunately came under the notice of the daughter of the Pharaoh and by her favor became "learned in all the wisdom of the Egyptians." Clement of Alexandria states that Moses studied medicine and chemistry under Egyptian physicians. He lived forty years in Egypt and appears to have had the best facilities for acquiring a knowledge of the customs of that people, and in the hygienic regulations of the Hebrews were more or less of the sanitary measures of the Egyptians. The Levites were the Hebrew sanitary police.

One excellent regulation that Moses made was that of a "rest day," or sabbath, as it was called, once in seven days. I believe that it is conceded by all that such a regulation conduces to health and long life. It may be added that statistics show that the Hebrews have had a remarkable immunity to some diseases. There were regulations in regard to land that were apparently intended to make the people an agricultural people, but also tended to long life and health. There were many regulations as to diet. It must be remembered that at a later date their sanitary rules were affected by the captivities in Assyria and Babylonia, and especially by the Parsees; and it is also believed that there was some influence from the Sabaeans.

Water is such a necessary thing that man must have availed himself at once of the use of the springs and lakes and streams.

An abundance of good water conduces to health in so many ways, as a drink, in the preparation of food, and for cleansing. When a man seeks a domicile more or less permanent he selects a place near a spring or lake or water course, where the necessary supply can be readily obtained. If for any reason he finds it desirable to change his location to where there is no spring or other open water supply, he digs a well.

Wells in countries where the rainfall and streams are not dependable are meeting places for travelers, where often caravans contend for access to the well. Many such wells have a distinct name, as Jacob's well in Samaria, the well of Beer-Sheba, Isaac's well, and the well of Rehoboth.

Old artesian wells have been found in Asia Minor, Persia, China, Egypt, Algeria, and even the desert of Sahara.

In course of time man learned that to have a large volume of water conveniently accessible was an advantage over mere proximity to a spring or streams, and forthwith he built himself a cistern in or near his house. This avoided the necessity of carrying small quantities at frequent intervals, and sometimes for some distance. We need to keep in mind the necessity that the water we use should be sanitary, whether we take it from a spring, or lake, or well, or cistern.

When finally men congregated in towns and cities, they found it necessary to obtain a water supply in large quantity, and also to provide some means of distributing the water to the individuals of the town or city. To accomplish this they connected together a number of springs or wells or water courses and, combining the supply of them all, carried the mass, usually by force of gravity, to the town or city, where some system of distributing channels was devised.

Because of the level character of Egypt and Babylonia there were no aqueducts in those countries, but instead there were canals that carried water from the Nile, Euphrates and Tigris, and were connected by large basins. There were aqueducts in Persia.

The city of Jersusalem was well supplied with water. Besides many springs and wells and pools there were several aqueducts. The pools of Bethesda, Hezekiah, Siloam and Solomon may be mentioned by name. There were also cisterns, especially the large cistern in the temple. Hezekiah, about 700 B. C., built an aqueduct that connected with the pool of his name. Another aqueduct was built in the time of Pontius Pilate; it was 50 miles long and brought water from about 25 miles away; there is no vestige of it now.

What appears to have been the earliest form of aqueduct in Greece has been found in the island of Cos. It consists of a bell-shaped chamber, built underground in the hillside to receive

the water of a spring and keep it cool; a shaft rises from the top of the chamber and receives the fresh air. From this reservoir is a subterranean channel. Greece was fortunate in having innumerable springs with a copious supply of water in all parts of the country. These were often connected by underground channels and the united waters passed into large cisterns or reservoirs, whence the towns were supplied by underground aqueducts. These cisterns were well ventilated by means of openings near the top, and there was usually an opening of the same kind at the junction of the aqueduct with the reservoir. Many times the aqueduct ended in an ornamental fountain in the market place. Many such fountains became famous for the coolness and purity of the water.

Rome, towards the close of the empire, was supplied by 19 aqueducts, 14 large and 5 small. In the year 100 A. D., there were 10, which brought to the city daily 33 million gallons, one-half of which was used by the public baths. Some of these aqueducts remain and are in use; others have fallen into decay or were destroyed by hostile armies, particularly those of the Goths. The aggregate length of the 14 large aqueducts was 359 miles, 304 of which were underground, 55 above ground on arches. Three of these aqueducts are still in use and furnish an abundance of water. The public reservoirs supplied the camps, ponds, fountains, amphitheaters, baths, and certain trades. The water was conducted through the city by pipes of lead or earthenware. The law required that there should not be any building over an aqueduct and no trees planted near it. There was severe punishment for damage or pollution.

Herodotus says that when the King of Persia traveled, this was before 450 B. C., he took with him four wheeled carriages drawn by mules, carrying water from the river Choaspes; the water had been boiled in silver vessels. The reason is not given, but would appear to have been to assure himself that the water was good to drink. This is the earliest instance of water being boiled for use as a drink.

Aqueducts for water supply have been found in Mexico and Guatemala, antedating the arrival of Columbus. The Incas of Peru built aqueducts that are stated not to be equaled by any others in ancient or modern times.

The proper *disposal of the waste* of the person, the household and the farm required some consideration by early man, especially when many persons were congregated together. The waste water, the garbage, the excreta were offensive to sight and smell, and to some extent dangerous to health. The most obvious means of disposal was burial in the earth, disposal in running water, or burning. Burial of excreta in the earth outside the camp was enjoined on the Israelites by their religio-sanitary code, and

doubtless was practiced by others, although we seem to lack the evidence. All the waste from the camp of the Israelites, and later from the city of Jerusalem, was carried outside the camp and city and burned. One of the valleys that skirted the city, called the valley of Tophet, a part of the valley of Hinnom, was given over to rubbish and filth, and fires were kept burning to consume the waste.

In Greek towns the houses were not crowded together; there were many little squares and groves. There is no account of drainage; it is thought that the refuse was used as manure or carried to the river or sea.

In Sicily, Agrigentum is mentioned especially as being intersected by drains, but whether these were simply to drain the marshes is not stated; it is not known whether they were used by the citizens.

It was at Rome particularly that the subject of drainage was given marked attention. The sewers, called cloacae, were vast underground aqueducts. The Cloaca Maxima was the largest, and the oldest Roman sewer, and it is supposed that it was the first application of the *arch* in Rome. It is generally attributed to Tarquin, 500 B. C., who was of Tuscan birth and Greek descent, and was doubtless acquainted with the improvements known in those countries. Pliny speaks of this cloaca as large enough for a loaded haycart to pass through. The mouths of two other similar cloacae, but smaller, are visible in the great quay wall near the Cloaca Maxima, and a whole network of sewers exists under a great part of the city. Some of these are not built of arched vaults, but have triangular tops formed of courses of stone on level beds, each projecting over the one below; a very primitive method.

The cloacae were intended to remove the storm water and the water from the springs, as also the overflow from the water supply of the aqueducts. It is probable that they were not used as sewers before about 400 B. C., when the number of houses had increased to an extent to require such use. About 200 B. C. the Cloaca Maxima was cleaned out by Cato, the Censor. At one time nearly a million dollars was paid to clean out the whole series of sewers. Agrippa had to turn the course of seven so-called rivers in order to clean them; it is said that he went up the Cloaca Maxima in a boat. The *curatores cloacorum* kept the sewers in order and a tax, *cloacarium,* was imposed.

For five centuries this system of sewerage was carefully preserved, extended, repaired and cleaned. With the decline of the city the great work was allowed to fall into ruins; only the main sewer remained, and this became choked up so that at its exit into the Tiber the mud filled it two-thirds high. Dionysius says that every street in Rome was drained into the Tiber.

In England, so far as we know, there was little or no attempt at sanitation until about the close of the middle ages. The large houses were built with one large hall, which was the general room for administration as well as for meals, and also sleeping. The air must have been contaminated by the large number of occupants, and the various uses to which the hall was put. The main building was surrounded by outhouses in which were horses, cattle and everything else that was necessary to the life of a large number of persons. This crowding was insanitary. The floors of the halls were usually of earth rammed down. On the floor the diners threw pieces of food for the dogs. All kinds of filth and refuse were thrown on the floor. Erasmus speaks of the litter on the floor remaining for twenty years, fresh layers being added with the dejections of dogs and men, remnants of food and other filth.

In large houses privies were numerous. In the 14th century especially there was a privy attached to each room. Much ingenuity was shown in their construction. In some cases a tower or turret was used entirely for the purpose. Shafts were carried down from the various chambers, through the walls, and, if there was a running stream in the moat, a part of it was diverted for the dirt pit.

The *disposal of the dead* is of sanitary importance. The problem is comparatively simple for the lower animals; they are buried or burned, or converted into fertilizers. The buzzards and other animals help out. But in the disposal of human remains sentiment has its place. After a battle the dead are usually placed in trenches or pits and covered with earth; sometimes are burned. Such trenches or pits, when opened, give vent to emanations, harmful and sometimes deadly. This is true also of church vaults and overcrowded intramural burying grounds.

In Egypt in the earliest age, the Negada period, there were two forms of burial; in one the body was placed in a squatting position and covered with skins; in the other the soft parts were removed and the disarticulated skeleton was entombed. In the earliest times the bodies were buried in underground chambers, later in tombs above the ground. In the oldest burials the body was washed in water impregnated with *natron* or some fragrant gum, and then fumigated with burning herbs and perfume. At a later date the internal organs were removed and the whole saturated with salts and aromatics and wrapped in skins and linen. It was customary in the lower and middle classes in the case of infants to place them in a box and bury under the habitation.

There were persons appointed to embalm the dead, and there were three different ways of embalming. The most expensive was as follows: The brain was drawn out through the nostrils

with an iron hook and by injecting drugs; then with a sharp stone an incision was made in the side of the body, the bowels taken out, the abdomen cleansed with palm wine and sprinkled with perfumes; then the belly was filled with pounded myrrh, cassia and other perfumes; the body was then sewed up and steeped in natron for 70 days. At the end of the time the body was washed and wrapped in bandages of flax cloth, smearing with gum. A less expensive way was to fill the syringe with oil of cedar and inject the abdomen, through the fundament, without making any incision; the body was then placed in natron for the prescribed time; on the last day the oil of cedar, which had dissolved the soft parts in the abdomen, was let out. The natron dissolved the flesh and there was nothing left but skin and bones.

In the third method the abdomen was well rinsed in syrmaea and the body steeped in natron 70 days. In each case after the end of the embalming, the bodies were delivered to the relatives to be placed in tombs.

Herodotus tells us that in Egypt dead cattle, if males, were buried in the earth until the flesh putrefied, and then the bones were taken up and buried on an island; the females were thrown into the river. Dead cats were embalmed, carried to sacred houses and buried. Dogs also were buried in sacred vaults.

Herodotus also says that the Ethiopians dried the human corpse, then plastered it over with gypsum, painted it to make it look as much as possible like life, then placed around it a substance which they dug up in abundance and easily wrought. Thus prepared there was no unpleasant odor, though kept in the house a year. Eventually the bodies were placed outside the cities.

Although the historic period of India generally goes back to about 4000 B. C., the evidence of sanitary rules is scanty. It is said that the aborigines buried the dead in the ground or under rude monuments. At one time it was the custom to place the dead in the fields, to be disposed of by the vultures. The Parsees, of Persian descent, have for centuries placed their dead on iron gratings on towers, where the vultures soon lay bare the bones, and these are afterwards gathered together. Cremation came into vogue between 2000 and 1400 B. C., in what was called the Vedic age. In the Epic period, 1400 to 800 B. C., the bones and ashes were collected and buried in the earth near a stream.

Herodotus says that in Scythia, when a king died a hole was dug in the ground, the body covered with wax, the belly opened and cleaned and filled with bruised cypress, incense, parsley and anise, sewed up and the body was then buried in the ground on a bed of leaves.

In Persia the dead were wrapped in wax to delay decomposition.

In Babylon the dead were embalmed in honey.

Among the Massagetae, says Herodotus, when a man attained a great age his kinsmen came together and sacrificed him, together with cattle. The flesh was boiled and eaten. This was considered a happy death. Those who died unaided were not eaten, but buried.

Among the Chaldeans the corpse was washed, perfumed, clad in the best clothing and buried in a tomb. Cremation was common; the ashes and any parts not completely burned were either left where cremated or buried; the ashes commonly placed in urns.

In Cochin China the dead were buried.

In Thibet the dead were sometimes buried, sometimes cremated, sometimes thrown into the river, sometimes exposed to beasts and birds of prey.

The Chinese placed the dead on the ground and built mounds over them.

In Thrace the corpse was exposed for three days, a feast was held, then the body was burned and the remains buried.

In Greece it was customary in early times to bury the dead near the houses of the living. Even in Athens this was so in early times. Later the dead were buried outside the towns. There was a belief that to touch a dead body was to be polluted. In Sparta at an early date it was required to bury outside the town because it was considered unlucky to live near the dead. Through Lycurgus, however, it was made permissible to bury in the city. Bodies were washed, anointed and dressed, often in a costly way, sometimes cremated, but this custom was not as common as among the Romans. The dead were usually enclosed in coffins of stone or baked clay, and generally the tombs were in rocky places.

The bodies of criminals, traitors and prisoners of war were abandoned to the dogs and vultures. At the siege of Troy the dead were cremated.

The Romans for many years cremated the dead. Burials were always outside the cities. Cremation began in the time of the Decemvirs, 450 B. C., at first only in individual cases, afterwards it became more common. After Christianity spread burial became the more common. From the second to the fifth centuries the Christians used the catacombs, where the bodies were placed in hollows cut in the limestone walls.

Tacitus, 50 A. D., tells us that the ancient Germans cremated the bodies of their illustrious men.

Among the Hebrews the corpse was considered unclean, and whoever touched it was also unclean and required purification. If a man died in a tent everything in the tent and everybody who came into the tent were unclean. There were cleansing ceremonies. Burials were always outside the city. Corpses did not remain in Jersualem over night. The body was placed in an open grave and carefully inspected for several days until de-

composition was noticed. The public cemetery was at least 150 yards from the city wall or boundary. The places selected for cemeteries were rocky and well drained. Overcrowding was forbidden. Sometimes the dead were burned, as in the case of one who was stoned to death, because of crime committed. The bodies of King Saul and his sons were burned. The valley of Tophet was partly used for burials. It is said that during the siege of Jerusalem by Titus, 70 A. D., 600,000 Hebrews died or were killed and the bodies were thrown into this valley.

The story of the burial of Jesus Christ is that the body was wrapped in linen, with spices, myrrh and aloes, about one hundred pounds weight, and this was "the manner of burial of the Jews." The body was then placed in a tomb in a garden on Mount Calvary. It would seem that one hundred pounds of spices was excessively large and expensive.

There are old burial mounds in Ireland.

The ancient Mexicans cremated the dead.

The Indian mounds in the United States contain the bones of the dead.

In Arizona, in the ruins of the Saladoans, are found evidences of both burial and cremation. The priests and perhaps other prominent persons were buried; the laymen generally were cremated. Burials were either in the walls or under the floors, and mostly in the temples, or the body was enclosed in an adobe case. After cremation, the ashes were placed in an earthen vessel and these vessels were placed on a pyral mound.

The desire to *bathe* is no doubt as old as the human race and prevails also among the lower animals. In warm countries, and especially after exercise, to bathe is a natural inclination; less so in cold climates and in cold weather. It is quite likely that in the most primitive times the small boy frequently came home with his hair suspiciously wet. In the history of every nation the time comes when, as towns and cities are built, the people feel the need of having bathing facilities near at home, so that we find that private and public bathing facilities are provided. Sometimes the private bath came first, as at Athens; sometimes the public bath came first. Homer mentions the use of warm baths after fatigue. It is said that the Lacedemonians first devised the hot-air bath. It is said of the Scythians that they never washed, but enjoyed a narcotic intoxication in combination with a vapor bath by shutting themselves up within curtains of felt and strewing hemp seeds, *cannabis indica,* on heated stones. The women, in place of washing, daubed themselves with a paste containing dust of fragrant woods and removed it on the second day.

Soap, as a medicinal and cleansing agent, was known to Pliny 25 A. D., who speaks of two kinds, hard and soft, as used by the Germans. He mentions it as originally a Gallic invention, for

giving a bright hue to the hair. There is reason to believe that soap came to the Romans from Germany, and that the detergents used in earlier times and mentioned as soap in the Old Testament refer to the ashes of plants and such other purifying agents.

The Hebrew priests were required on pain of death to wash their hands and feet on entering the tabernacle; and at the sacrifice it was required that the animal should be washed both externally and, after section was made, also internally. The people were required to be clean in their persons, their clothing, their houses and habits. Washing was to be done preferably in running water, a regulation to be commended. To wash before and after meals, after urination and defecation, after touching the dead, and anything else pronounced unclean. Eventually, in some places there were public baths, the people bathing daily before breakfast. In time also the houses of prosperous persons had bathing places in the courts. The earliest biblical account of bathing is that of the daughter of Pharaoh and her attendants, who went down to the Nile to bathe. Among the orientals the means of bathing were provided as an act of hospitality for strangers.

The remains of ancient baths have been found in the district of Lebanon in Syria, the Phoenicia of the ancients. Alexander the Great was astonished at the magnificence of the baths of Persia. In Egypt, when Alexandria was taken by the Caliph Omar, A. D. 646, it contained 4,000 baths, and the great library of 700,000 volumes was burned to heat them.

From Phoenicia the use of the bath entered Russia and from Russia spread to Scandinavia. In very early times it was used along the Mediteranean. In the tombs of ancient Lycia are found instruments used in the bath. It is supposed that the Moors carried the custom into Spain. Ireland also received the bath from Phoenicia.

Rome at one time had over 850 public baths. The early Romans washed their faces, arms and legs daily and had a general bath once a week. During the time of the Republic, 500 to 40 B. C., public baths were built. At first the bath was simple, but in time it became luxurious; from the hot bath to the cold, and then the rubbing by slaves and the perfuming. In time also the bath houses became houses of prostitution. One ancient bath is now a church of the monks of Saint Bernard.

The Roman public baths supplied cold, hot and warm water; cold ablutions and shampooing, and these baths were free to everybody. Under the emperors they attained a high degree of perfection. They were called thermes. According to Galen the complete bath has four parts, with different properties, first hot air, next hot water, then affusion of cold water; last, the sweat is wiped off. Some public baths were of great size; that of Cara-

calla was a mile in circumference; the ruins are still seen; it accommodated 2,000 persons.

The Greeks were attentive to personal cleanliness. A daily bath was almost universal. In the early days cold water was used, unless after fatigue, when the water was warmed. Most towns had public baths; baths of private persons were often opened to the public on paying a small fee. In each bath room there was what was called a *strigil,* used to scrape away the perspiration. After the bath the body was anointed with fragrant oil, said to prevent roughening of the skin.

The ancients, all whose exercises bore some relation to war, accustomed themselves early to bathing and swimming. In Rome the sons of the nobility, after having heated themselves in the Campus Martius, with running, wrestling and throwing the javelin, used to plunge into the Tiber. By these exercises they enabled themselves to pass rivers and lakes in an enemy's country. And these were often passed through after marching in the hot sun.

In Egypt the priests set the example of personal cleanliness, bathing twice a day and twice at night. The people generally used the bath freely.

Baths were introduced into England at the close of the 13th century. A lavatory was often connected with the hall of the house, and this was quite desirable, because the diners usually handled their food with their hands; forks were rare, even in the 14th century.

Contagious diseases afflicted the ancients more than the moderns, because the former did not know so well how to prevent the spread of such diseases. One such disease the Hebrews undertook to guard against. They called it leprosy, but whether it was any kin to what we now call leprosy appears to be uncertain. When its presence was recognized in an individual he was isolated outside the camp or city and his infected clothing was burned. King Uzziah, however, was permitted to occupy a separate house. Segregation does not appear to have been enforced in all cases, as in the case of Naaman, the Syrian general, who mingled with his fellows; and Jesus is stated to have gone into the house of Simon, the leper, at Bethany.

In Persia, whoever had leprosy or scrofula, was excluded from the town and not permitted to have communication with other persons. It was believed that the disease was a punishment for some offense against the sun.

According to Herodotus, the Colchians, Egyptians and Ethiopians were the only nations that practiced *circumcision* from the most ancient time. He says that the Phoenicians and Syrians stated that they learned it from the Egyptians, or Colchians. Which first practiced it, the Ethiopians or Egyptians, is uncertain.

The practice in Egypt goes back at least to the time of Rameses II, about 1500 B. C.; all the priests and nobility were circumcised; even circumcision in the female was widely practiced in early times. Herodotus says that the Egyptians practiced circumcision for the sake of cleanliness. But it was practiced much more extensively than he knew, and there has been much speculation as to why so many peoples have practiced it, peoples which apparently had no communication with each other. For instance, it was a custom among the Aztecs of Central America and among some of the tribes along the Amazon; among the Australians, Papuans, in the New Hebrides, New Caledonia, and Tahiti; was widespread, and still is, in East and West Africa; prevailed in Egypt, Ethiopia and Abyssinia; in Arabia, Persia and Asia Minor. From Arabia it is believed to have spread to Persia, India and Syria. In Arabia it was usually performed at puberty; in Egypt at any time up to the 14th year. The peculiarity of the Hebrew custom was that it was part of a religious covenant, a religious ceremonial, and performed on the eighth day after birth. Although a sanitary measure, being helpful to cleanliness and tending to prevent infection, and therefore to be commended, it does not appear that such was the intention of the Hebrews. To them it was symbolic of temperance, abstemiousness, and the control of the passions.

Food and drink.—The use or non-use of certain articles of food and drink is usually a matter of custom or taste, but in some cases has the force of religious injunction. The Egyptians believed that nearly all diseases entered the body with the food, and many things were not eaten on that account. The hog, for instance, was considered unclean. Beans and onions were avoided because they caused flatulence. Herodotus says that he knew why the Egyptians abhorred swine, but it was not becoming in him to tell. The goat was not used for sacrifice, but cattle were sacred. The animals used for food were slaughtered by the priests after careful inspection; what the inspector rejected was not eaten.

Among the Greeks the Pythagoreans measured the quantity of food, drink, exercise and rest by rule, determining the manner of preparing what they ate. They used vegetables freely, abstained from bird, beast and fish, took milk and honey, excluded eggs; drank water, and no wine or vinous liquor.

To the Hebrews many things were forbidden to be eaten. Drugged wines were forbidden; vinegar and other liquids suspected of containing foreign matters were to be strained through a cloth. Vegetables were examined for vermin. Animals that died of disease or by violence, whether intentional or by accident, were not to be eaten. In fact, meat to be eaten should be killed in a certain way, namely, by cutting the animal's throat. The

animal must be inspected before slaughter and again afterwards. A number of conditions found in the after inspection would render the animal unfit for food; and some of these might occur in the act of slaughter. The method of slaughter was called *Shechita,* and was considered safer for the butcher, caused unconsciousness quicker in the animal, therefore gave less pain, and the body was completely emptied of blood. It was required that the animal should be rested before slaughter. All these requirements appear to be quite reasonable. The Hebrews were forbidden to eat fat or blood.

It is stated that these dietetic regulations were mainly intended to prevent idolatry; the prohibitions prevented to some extent the Israelites from having familiar intercourse and forming matrimonial alliances with neighboring idolatrous peoples. The Israelites would not be likely to worship animals that they were forbidden to eat as unclean; some of these animals were worshipped by idolatrous nations; swine were sacred to Venus, the owl to Minerva, the hawk to Apollo, the eagle to Jupiter, the dog to Hecate, the lion, wolf, cat, ape, frog, rat, otter, beetle, fly, serpents and fishes were idolized by other nations.

It is proper to state in conclusion that the paper is a sort of bird's-eye view of a subject, the scope of which is so broad and the details so many that it has been very difficult to keep the paper within reasonable bounds.

Dr. G. M. Kober said that he felt sure that all would agree that Dr. Lamb's paper had been so comprehensive and so instructive as to make discussion of it rather unprofitable. It seemed well to emphasize, perhaps, the fact to be discerned throughout the paper that the origin of sanitary measures lies in the desire for the preservation of health which is innate in man. This fact is clearly indicated by the history of primitive mankind everywhere. Among the North American Indians could be observed practices which are clearly quite logical means for the preservation of health. After the death of members of some tribes the friends or neighbors of the deceased individual destroy his clothing and personal effects and tepee by fire, and thus employ the most effective means to prevent the transmission of disease. The disposal of the dead by cremation is not uncommon among primitive people. As to personal hygiene, all Indians are fond of both the plunge and vapor baths. They believe that the use of the vapor bath is the most effective way to overcome the feeling of fatigue; and this is a very logical belief when we consider the doctrine of the production of fatigue toxins by exhausting labor and what may be accomplished by the rapid elimination of such toxins. The methods employed by the Indians in the ceremonial purification before the medicine dances,

which include fasting, exercise, and bathing, would do us all good when we consider the rôle played by endotoxins in the production of so much disease among modern civilized people.

The Karayá tribes in Brazil have a very distinct idea of transmissibility of tuberculosis; they always inquire of strangers approaching their habitations whether they have a cough, and if a cough is acknowledged, hospitality is denied the stranger. Other tribes, like the Kirgise, do not hesitate to drive away with arrows anyone afflicted with smallpox, seeking to approach their dwellings. Thus we see a prototype of the shot-gun quarantine which has been practiced in our own country. The use of placards to indicate the presence of communicable diseases has its prototype in the use of warning signs by the natives of Me Khong in Farther India to denote the presence of cholera. The Traoes of Cochin China, the Tunguses and Burates, and some of the Indian tribes in Northern Mexico, abandon their smallpox patients and other contagious cases, after providing them with food and water. The natives of Keisar Island interdict marriage with lepers, and those of Watubela Island transport their lepers to Gorong for isolation and treatment.

The far-reaching effects of the Mosaic hygienic code of rules could hardly be exaggerated, especially those having to do with the hygiene of food and of eating and cooking utensils. The priestly inspection of food animals, while primarily given a purely religious significance, had also its sanitary purpose, with a forethought no doubt, and thus was eliminated from the nation's food supply diseased animals, and especially tuberculous cattle. The regulations governing the cleansing of eating and drinking utensils and ablution of the hands after every unclean act might well be imitated at the present time; the bacillus carrier, even though engaged in the care or preparation of food, would thus be robbed of his dangerous character. The Hebrews today enjoy greater longevity than do other races among whom its members dwell; how much the Mosaic laws have to do with this fact he would not undertake to say.

One other feature might be commented on: However brilliant the hygienic progress of the Greeks and Romans, upon the history of which peoples our own history rests, there came a period when all the sanitary measures learned by them at great cost were neglected. Wars destroyed public works. The middle ages saw the building of crowded and unsanitary towns surrounded with walls; the streets were narrow and winding for defensive purposes, shutting out light and air. Stables and houses were close neighbors, and human filth was thrown into the streets and manure heaps. The dead were buried within the churchyards. Worst of all, the water supply was obtained from shallow wells digged within the confines of the towns; the water was thus bound to

be contaminated. Under such circumstances one can easily understand the enormous extent and fatality of the epidemics of filth diseases which raged from time to time during these centuries; diseases such as typhus, typhoid and bubonic plague. The helplessness of the people may be understood when we find that the Faculty of Paris attributed the Oriental Pest to the conjunctions of planets on a certain day in 1345, and the Faculty of Leipzig, with equal gravity, asserted that it was connected with floods, earthquakes, visitations of grasshoppers, and other similar absurd causes. The public regarded the plague as an evidence of divine wrath which they hoped to allay by all sorts of self-inflicted punishments, and the Passion Play of Oberammergau and elsewhere originated about this time.

Venice was the first community to adopt, in 1347, the practice of segregating persons suffering from contagious diseases; the period of segregation was uniformly forty days, and from the word *quaranta,* forty, we derive our word quarantine; the Venetians also introduced the system of compulsory notification of the authorities of the existence of contagious diseases. Out of these experiences of the middle ages, and out of these measures adopted by the Venetians, has grown modern sanitation, increasing in effectiveness as it is based more and more on exact knowledge, until the average duration of life has been increased from 18 years in the 16th century to over 45 years at the present time. Apart from house sanitation, no two factors have contributed so much to the general result as the improvement of the air we breathe and the water we drink. Indeed we have ample evidence that with the introduction of sewers and pure public water supplies, the general mortality in many cities during the last fifty years has been reduced fully one-half, the good effects being especially shown by a marked decrease in the number of deaths from typhoid fever, diarrhoeal diseases and consumption.

Dr. J. Walter Fewkes reminded the audience of the constant and intimate connection of certain sanitary acts considered by the speaker of the evening, and taboos or religious beliefs of primitive people. Among the Dynastic Egyptians, for instance, the embalming of the body was regarded not wholly as hygienic, but can be traced to a much stronger religious motive, the preservation of the body as the seat of the soul, or the desire to perpetuate by all human means a connection of body and soul. Mummification, as practiced by these and other people was, as shown by the speaker, a sanitary measure, but its origin is traceable to an intense religious desire not to destroy the material body of the deceased, since the destruction of the body meant to them the annihilation of the "breath body" or spirit. The utmost care was taken to preserve the body as the seat of the soul. After death it was embalmed and hidden away in secret

tombs and mastabas, or buried under massive pyramids, the walls of which could not be penetrated by marauders, for immortality itself was, in their belief, dependent on the preservation of the body.

Cremation may, no doubt, have originated as a sanitary method of destroying the body, lest by its decay it harm the living; but this act was largely influenced by a fear of the dead and other religious ideas connected with the future life. If the body were annihilated its ghost would also be destroyed, and not trouble the living. We find among native Indian stocks inhabiting adjoining territories, as the Pima and Mohave-Yuma, one tribe practicing inhumation while its neighbor cremated the dead, or as at Casa Grande in the same village one caste, possibly the priestly, inhumated the dead while the deceased bodies of the common people were burnt. The very persistence of these customs side by side indicates that some superstitious idea, rather than a sanitary one, dominated the mind in cremation.

But this conservation of a superstitious idea is not always strong enough to survive, for while the modern Hopi have a great abhorrence of cremation, the cliff dwellers, supposed to be related to them, burnt some of their dead. In the Mycenean age priests or kings were inhumated, as shown by the excavations made in Argolis by Schliemann and Dörfield, but cremation was deemed necessary among the Greeks for the rest of the soul, lest "it wander a hopeless ghost on the shores of the Styx." Among the primitive Christians and with the majority of modern believers, the recognition of the sanitary value is subordinated to other ideas.

Lustration of the body, purification either by emetics or water, is regarded among all primitive people as a prescribed act in religious rites, and no self-respecting Hopi priest will perform any sacred ceremony without first thoroughly washing head and body. Such acts are sanitary in nature and possibly originated in part for bodily cleanliness, but this is not a wholly satisfactory explanation. Various experiences of primitive peoples have shown them the sanitary value of certain medicines or practices which they explain by false hypotheses. The mistaken theory does not, however, interfere with the efficacy of those practices.

These and a host of other examples that might be mentioned show that in the primitive mind the idea of bodily and religious cleanliness is closely interwoven. Many of the sanitary laws of the Israelites, American Indians and other peoples mentioned by preceding speakers, may have originated in a desire to secure health, but they also owe their existence and perpetuation to religious taboos with which they have become so interdigitated that the two cannot be separated except with the greatest difficulty.

THE GOLDBERGER DIET IN PELLAGRA WITH REPORT OF A CASE.*

By W. M. Barton, M. D.,

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Although from every point of view, clinical, pathological, epidemiological, the disease pellagra presents phases of the greatest interest, my intention this evening in presenting this case is solely to bring to your notice, if it has not already been brought, a recent discovery in the dietetic treatment of pellagra by Dr. Joseph Goldberger of the Bureau of Public Health. The case presented has been under treatment by the Goldberger diet and the results have been extremely favorable.

Colored man, age 32, laborer, nativity Virginia; chief complaint diarrhoea. Previous personal history. Had had measles, whooping cough, scarlet fever and mumps when a child, from all of which he made good recovery. Had a chancre eight years ago. Lived in Virginia the first five years of his life, then came to Washington where he remained until he was twelve years old, then went to Southern Maryland where he lived until he was fifteen. He then came back to Washington and has lived here all the time except for a few months, when he was in Pennsylvania. He has been a large eater of corn bread, said that he would eat it all the time if he could get it. Was an excessive user of alcohol, especially gin, until three years ago, when he stopped entirely.

Present Illness.—About two and one-half years ago he began to have sudden sensations of chilliness which began in the lumbar region, gradually traveling up his back and shoulders, and down the legs to his feet. This sensation of chilliness would be followed by a hot, burning sensation which annoyed him a great deal. These paresthesias came on several times a day. He also had an occasional attack of stomatitis and some ptyalism. About two years ago he began to have stomach trouble, chiefly marked by epigastric pain. This pain became gradually worse and he finally began to vomit. This was accompanied by burning sensations in the stomach and also in his mouth, which felt, as he states, like fire. At first he had these symptoms only after meals. Later he had attacks of longer continued vomiting. This condition kept up intermittently until he went to Garfield Hospital in May, 1914. The vomiting was severe at this time. At the hospital it was thought that he had gastric ulcer. He remained there for two months, was very much relieved and was discharged in July. He was advised by physicians there to go to the country, which he did. About two weeks before leaving the

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hospital he noticed pigmentations on the dorsum of each hand between the metacarpal bone of the thumb and index finger. These patches were of the size and shape of a nickel and were accompanied with slight itching. After going to the country he was there only one week when he began to have diarrhoea.

He seems to have had a normal appetite, stating that he would vomit and then immediately go back and eat a full meal, but would vomit as often as he did so. He also states that his mouth was slippery and there was a hot sensation present and some salivation. He entered the Washington Asylum Hospital August 19.

On admission he had a triangular dermatitis with apex toward the wrist on the dorsum of each hand. These patches were alike in size, shape and location. Along the base of the triangles there was an excoriation ½ inch long and ¼ inch wide, from which there was an exudation. These were treated and healed. While they were healing, a gauntlet-shaped pigmentation which extended over the back of each hand, developed, the skin becoming dry and cracked, and finally going on to desquamation. On each elbow there was an irregularly-shaped patch of dermatitis about 2 inches in diameter which was also desquamated. There was also an area of dermatitis about the mouth and nose which extended from the center of bridge of nose to the chin, running laterally to a point about an inch on either side of the nose. This area was also pigmented and desquamated.

Glandular System.—The epitroclear and posterior cervical glands were enlarged. Other glands normal.

Digestive System.—The teeth on admission were in fair condition. The tongue was somewhat coated posteriorly and centrally, the edges were red and raw, a typical example of so called bald or cardinal tongue. The mucous membrane of the cheeks was studded with small ulcers, and the fauces were also dotted with small ulcers. The gums were spongy and bled easily. When first admitted he vomited considerably, especially after eating a heavy meal. He also suffered considerably with diarrhoea, the stools being liquid in character, and very dark, almost black. This diarrhoea was checked, but recurred intermittently. His evacuations were very painful.

Nervous System.—Patient on admission complained of insomnia. Said that he had never felt vertigo or headache, nor any neuralgic pains. His mental condition was pretty clear. He had no hallucinations, delusions or illusions and was well oriented.

Vascular, genito-urinary, respiratory systems and liver were normal. The spleen was not palpable.

Laboratory Findings.—Urine amber color, reaction faintly acid, sp. gr. 1,015. Albumen and sugar negative. Uric acid crystals and non-motile bacteria present.

Blood examination which was made since his improvement showed leucocytes 9,900. Differential count polymorphonuclear 73 per cent., large mononuclear 12 per cent., small mononuclear 8 per cent., transitional 6 per cent., eosinophiles 1 per cent.; hemoglobin 80 per cent. Red count 5,100,000.

Temperature.—While at the hospital the temperature varied between 96 and 99 and the pulse between 66 and 120.

On admission the vomiting was treated with carbolic acid and the diarrhoea with bismuth. He was put on Fowler's solution five minims three times a day, increasing one minim daily until fifteen were reached. This was continued until September 7th. The vomiting had ceased, but the stomatitis, diarrhoea and dermatitis had not improved. He was then put on sodium cacodylate grain $\frac{3}{4}$, hypodermically three times daily, increasing the dose $\frac{1}{4}$ grain a day until 2 grains three times a day were taken. This was continued until September 21st. There was absolutely no improvement noted. He was then put on the Goldberger diet, and arsenical medication stopped. The diarrhoea persisted for about six days and was treated with bismuth. There were but one or two slight recurrences of the diarrhoea after he commenced the diet and these were slight. The dermatitis cleared up until at present it is hardly noticeable. The ulcers, soreness and redness in the mouth also disappeared and now his mouth is apparently normal. His general condition is very much improved. He is cheerful and the insomnia is entirely absent. He says that he feels fine and that he has not felt so well in two years.

The patient's weight is 108 pounds and he is apparently gaining. His maximum weight he says was 160 pounds. There seems to be no room for doubt that he has improved rapidly and substantially since the commencement of his dietetic treatment, and from all appearances it would seem that his improvement, subjective and objective, is progressive and continuous.

Although pellagra has been known for almost two centuries, and during this time a most extensive literature has grown up concerning it and all sorts of experimental investigations have been made, nevertheless we are today in total ignorance of its essential cause.

Further than this we do not know absolutely whether the disease is dietetic in its origin simply and entirely, or whether it is contagious or infectious and therefore to be classed as communicable.

In Europe the spoiled maize theory popularized by Lombroso apparently dominates medical opinion. In this country, however, where recent investigations have shown the disease to be widespread and extending and increasing with an alarming rapidity, the tendency appears to be to regard pellagra as an infectious disease and therefore communicable.

Two American Commissions on Pellagra, namely, the Illinois Pellagra Commission and the Thompson McFadden Commission, Siler, Garrison and MacNeal, have lent support to the latter theory.

The alarming extent to which pellagra exists in this country, notably in the South, has awakened the interest of the Government in its investigation, and during recent years the Bureau of Public Health, through its pellagra investigations, has taken a laud able part in this work. The names of C. H. Lavinder and Joseph Goldberger will always be remembered in this connection.

With a view of putting the infectious theory to the test Lavinder and Francis undertook a comprehensive series of inoculations in monkeys. Every kind of tissue secretion and excretion from serious and fatal cases of pellagra was inoculated in every conceivable way into over a hundred *rhesus* monkeys with entirely negative results. Francis also made cultures of the blood secretions and excretions of pellagrins by the newer anerobic methods, but with entirely negative findings.

Epidemiologic investigations were likewise carried on in different parts of the country where the disease prevailed, and it was as a result of these studies that Goldberger finally became convinced that pellagra is not a communicable disease and is therefore not infectious. To him these epidemiological studies pointed not only against the theory of the infectious nature of the disease, but they finally convinced him that it is dietetic in origin, not in the older sense of Lombroso and the Italian School, who believed that spoiled corn is the cause, but in the sense that persons develop pellagra because of the prolonged consumption of foods which are either deficient in certain necessary vitamines or because of the presence of some chemical substance or substances therein. Whether this substance is excess of soluble aluminum salts, as suggested by Meyer and Voegthin, is to be later determined.

Without going into too great detail it will be necessary to mention some of the facts which appeared as a result of epidemiological investigations and which led Goldberger to the foundation of his hypothesis and the introduction of his diet. The details of these facts may be found by those especially interested, in the Bulletins of the U. S. Public Health Service, one published June 26, 1914, by Goldberger, on the Etiology of Pellagra, with the significance of certain epidemiological observations with respect thereto, the others published Sept. 11, 1914, on the Cause and Prevention of Pellagra.

In the first Bulletin the author calls attention to one great fact disclosed by epidemiological studies which had apparently escaped attention and which appeared to him to be inexplicable on the theory of the communicability of the disease, namely, that although

in many asylums and hospitals in this and other countries new cases of pellagra develop in inmates, even after ten, fifteen or twenty years of residence therein, which clearly shows that the cause of the disease exists and is operative in such asylums and hospitals, yet never in the history of any of them has a single case developed in any nurse or employe of those institutions, although the environmental conditions have been apparently identical, and the contact with cases of the disease has been intimate and prolonged.

The following specific facts will be quoted from the Bulletin:

1st. Take the records of the Georgia State Sanitarium. Here 996 miscellaneous cases were admitted in 1910. Excluding those that died, were discharged during the first year, or had pellagra on admission or within a year of admission, there remained at the institution after one year 418, and of this number 32 or 7.6 have since developed pellagra. Of the present employes of the asylum 293 have been in more or less intimate association with pellagrins and have lived in substantially the same or in identical environment as the asylum inmates for at least a year. If pellagra had developed among these employes at the same rate as it did among the inmates, then 22 of them should have developed the disease. As a matter of fact not a single one did so.

2d. In a large pellagrosari near Venice, where 300 to 500 pellagrins are constantly cared for by a large number of Sisters of Charity and other employes, not a single case has ever appeared in any person employed at the institution.

3d. At the South Carolina State Hospital for the Insane, where 900 pellagrins were treated in five years, not a single case of nurse or attendant infection ever occurred.

The same state of affairs is reported from the State Hospital for the Insane at Jackson, Miss., and elsewhere.

In all the institutions the ward personnel, nurses and attendants come in close contact with patients and occasionally live right in the wards with the patients.

In all of those institutions, after varying periods of institutional residence, some after even 10 or 20 years, there are instances of patients developing the disease as a result of the operation of causes which certainly reside within the institution, yet nurses and attendants living under identical conditions appear uniformly and without exception to be immune.

Naturally Goldberger asks the question: If pellagra be a communicable disease why this remarkable exemption of nurses and attendants?

He states with apparent reason that the peculiar exemption or immunity is inexplicable on the assumption that pellagra is communicable. Neither contact in any sense, nor insect transmission, seem capable of explaining the phenomenon. It is after arriving at this point in his estimate of the epidemiologic studies of pellagra so far accumulated, that Goldberger believes himself justified in hunting for another cause.

According to him the cause resides in the differing diets of the two classes of persons. He frankly states that with regard to the question of just what in the dietary is responsible, he has no opinion to express. He thinks the preponderance of vegetables and cereals in institutional diets, that is where the patients themselves are concerned, and under extra-institutional poverty conditions, notably rural poverty, may contain the explanation. He is satisfied that the consumption of corn or corn products is not essential to the production of pellagra, but that corn in excess, even the best of corn, however nutritious or high in caloric value, may be objectionable when the other elements of the dietary are made up exclusively of other cereals and vegetables. In the diet of those developing pellagra there is, according to Goldberger, always a disproportionately small amount of meat or other animal protein food, while the vegetable component in which corn and syrup seem to be prominent and legume relatively inconspicuous, forms a disproportionately large part.

Poverty and the high cost of food force the individual and the institution under certain circumstances to economize by cutting out the expensive elements—the meat, eggs, milk, legumes—and to substitute, especially in winter, a cheaper form of food—corn, carbohydrate (syrup, molasses) and what vegetables can be procured, along with the cheaper fats, such as "sow belly."

So much for the theory upon which the Goldberger dietetic treatment of pellagra was erected. The ideas have recently been put to a practical test in the Georgia State Sanitarium by Lorenz. An entire ward of 48 patients, containing 27 pellagrins, were put upon a special dietetic treatment. The results of this investigation were published in one of the Bulletins above mentioned, namely, that of September 11, 1914. It will be perhaps remembered that the public press took notice of them, and it was in this way that they came originally to my attention.

Of the 27 cases of pellagra treated, all of these of acute type, 7 died, 3 were unchanged, 13 were improved and 4 designated as recoveries. The time of observation was 8 weeks. In the four recoveries noted, all mental and physical symptoms disappeared entirely. Six of the 13 improved, recovered completely from mental symptoms, and 7 of the 13 in which the disease developed upon an old psychosis; this of course was in no way altered. The physical improvement in the 13 cases was manifest in all, though slight roughening and thickening of the affected skin remained. Three cases did not improve substantially, but one of these cases was a paretic. Of the 7 fatal cases 2 had serious heart lesions and 3 died in less than two weeks after admission, showing the desperate condition.

The diet supplied was the following, and this is the diet which was used in the case above reported.

For breakfast: One or two eggs, one-fourth pound fresh beef

(usually fried as steak), wheat roll, coffee with milk and sugar, frequently oatmeal with milk and sugar, and an additional 8 ounces of milk.

For dinner: Fresh beef (one-fourth pound, either roasted, boiled or fried), Irish potatoes, rice, onions, squash and any green vegetable that could be obtained, such as cowpeas and cabbage. Wheat bread daily; corn bread twice a week; coffee with milk and sugar.

For supper: One or two eggs, wheat bread, coffee with milk and sugar, and an additional 8 ounces of milk, as desired.

Milk was also supplied between meals whenever the patient desired a drink. It must be mentioned that the one-half pound of beef supplied should be of good, lean, fresh meat; no bone.

Dr. Roy had recently had the pleasure of talking with Dr. Goldberger on the subject of pellagra, and it certainly seemed as if he had struck the keynote both of the etiology and treatment of this disease. Goldberger pointed out that the greater incidence of pellagra in rural districts may be explained by the fact that the city poor have a much greater variety of food than do the country poor; this difference is very true. Also, it was to be remembered that the attendants and staffs of institutions, particularly religious ones, are usually supplied with good food, while the inmates have poorer food; this accounted for the immunity of the attending staffs from pellagra. A case presented by Dr. Roy before the Society a year or two ago had been put upon the Goldberger diet and was now entirely well. We must keep in mind the possibility of a disturbance of the central nervous system in these cases.

Dr. Tom A. Williams said that a significant fact comes to the surface when we examine the Goldberger diet and the effects of it. He had made two trips to Columbia, S. C., and had found that the only treatment of pellagra employed there was to give the patient a rich, varied diet; many patients got well but many relapsed upon returning to their homes. The significant fact is that this disease occurs only in poor countries and where corn is the staple of diet, namely, in Italy and in the southern United States. Corn is a very poor diet alone; animals fed upon this grain alone in time die of inanition; wheat alone, however, is sufficient to keep animals alive. The reason is that corn contains very little tryptophan, which is an element necessary for body building. The seasonal recession of pellagra is during the time when the people begin to eat fresh pig meat. Wasteful habits of farming are responsible for the living conditions among the poor in the Southern States; the nitrogen has been taken from the soil for many years and none has been put back. Proper rotation of crops would do much to correct the situation.

Dr. Burbank said that his experience with pellagra had been a strictly local one; he had seen about eight cases in the wards of Freedmen's Hospital. Of these all but one died; all presented mental symptoms; all were put on a liberal diet without materially modifying the course of the disease. In one case salvarsan was administered and this patient thereafter improved very rapidly for about two weeks; after the second dose he reacted badly and soon died. The only case without a fatal termination was a recent one, a woman, 32 years of age, from Anacostia: she had no gastro-intestinal symptoms and seemed to be very hungry, but her mental state was such that she would not take sufficient food. She had been removed to the Washington Asylum Hospital.

Dr. Mary O'Malley said that she had had nine cases of pellagra among the women patients in the Government Hospital for the Insane. Three of these were suffering from the disease when admitted, and their psychosis was dependent upon the pellagrous condition; they showed a delirium and all the other clinical manifestations of an acute intoxication. Of the other six cases, one developed pellagra after she had been in the hospital eight or nine months, another, after residence of a year, and the others appeared after varying periods, one woman having been here twenty years when she developed the disease. In these six cases the pellagra had no apparent relation to the mental disease. Whenever pellagra has become manifest in the hospital the patients have been immediately transferred to a hospital ward and given a most liberal diet. While the diet, in my opinion, influences the symptoms, yet I find in all my cases that as the cold weather approaches the acute symptoms disappear. When Dr. Barton's case was presented this evening I wondered if it were not possible that the subsidence of the symptoms was in a large degree dependent upon the approach of the cold weather and that they will probably reappear in the spring. While we have several cases in the hospital at the present time, and within the past few weeks all the physical symptoms have disappeared, yet I do not consider any of them cured.

Dr. Pfender now has under his care a case of pellagra in the third year, a woman from Texas, whose physicians had sent her here in the hope of improvement from the colder climate. She had been put on as full a diet as was possible with concurrent symptoms of gastric ulcer; she had also received injections of soamin. At present she was taking fruit juices in abundance and was given free doses of arsenic. She seemed to be improving.

Dr. L. O. Howard hoped that Dr. Goldberger would give adequate consideration in future publications to the recently published work of the Thompson-McFadden Commission, especially in regard to the findings of that commission on the behavior of pellagra in certain towns of North Carolina which had installed water-carriage sewer systems.

Dr. Rogers recounted the case of a woman, in good circumstances and with uniformly good diet, who had pellagra in its typical form. Mental symptoms were evident and were of a hysteroid type. She was taken to a hospital, put on a liberal diet, and ultimately recovered. There had been no recurrence in two years which have elapsed since her recovery; she was able to care for her three children and to attend to her household work.

FOREIGN BODY REMOVED FROM THE URINARY BLADDER; CASE AND SPECIMEN.*

By Llewellin Eliot, M. D.,

Washington D. C.

The patient from whom this specimen was removed, was a white man aged 19 years, native of Maryland; for a number of years he had suffered from cystitis. Some of his attacks were very mild and of short duration, others were quite severe, incapacitating from any kind of labor or duty. The treatment usually given was a tea made from watermelon seed and lithia tablets; these remedies ordinarily relieved him.

About seven years ago, he passed blood with the urine; an analysis showed deposits of calcium oxalate. At that time I made a positive diagnosis of stone in the bladder, although the stone had been suspected for some time. An operation for its removal was advised, but positively refused by the parents; other physicians were consulted; they treated him for cystitis with some relief. For the last two years he had passed a gritty powder.

During August, 1914, he had built a large motor boat, and on the 14th, there was considerable trouble in turning the starting wheel, requiring all his strength; the next day he felt very bad, vomited a bilious matter, suffered at urination; his physician treated him for bilious remittent fever, without benefit. On the 22d there appeared just above the symphysis a hard projection, very painful and stationary; urination very frequent. He was prepared for removal to this city and I saw him late in the evening of the 23d. His condition was one of rapid emaciation; pains were extreme, principally in the bladder and rectum; urine free from obstruction, passed very frequently and caused much burning; no appetite; bowels open; an enlargement just above the symphysis very noticeable, very tender to touch, no pressure being permitted. The finger in the rectum pushed against a hard round substance; pressure against this substance was felt upon the prominence above the symphysis. An immediate operation

* Reported to the Medical Society October 7, 1914.

was advised ; this was refused ; the reason given was that he was too weak to stand one, but that in a week or ten days he would be strong enough. Hydrochloride of heroin one-twelfth grain was given hypodermically, to be repeated every two hours if necessary, and lithia five grains at frequent intervals ; applications of saturated solution of boracic acid over the lower abdomen. There was no elevation of temperature.

The next morning he expressed himself as feeling much better ; had a good night after one o'clock ; enjoyed his breakfast. The burning at urination had lessened, but urine flowed involuntarily ; was nauseated at times. Urinary analysis furnished by the hospital showed : Color, light straw ; specific gravity, 1010 ; albumen, moderate amount ; casts, none ; cylindroids, none ; epithelium, none ; leucocytes, abundant ; pus bacteria ; uric acid, none ; triple phosphates, occasional ; mucous threads, none ; red blood corpuscles, yes ; urates, none ; calcium oxalate, none. He begged for an operation, but his father refused to have it done. At 8 o'clock in the evening the urine was under control, but when passed was hot and fiery. Morphia sulphate one-eighth grain as necessary. No temperature elevation.

25th ; did not have a good night, was nauseated and vomited several times ; severe pains along the groins, along the penis and especially severe in the glans. In consultation with Dr. W. P. Carr the diagnosis of stone or other foreign body in the bladder was confirmed, and an immediate operation advised as the only chance for his life. The urgency of the case was strongly placed before the father ; after consideration he finally consented, and preparation was made for operation on the morning of the 26th.

Gas ether was administered by Dr. A. L. Hunt, and the suprapubic operation was done by Dr. Carr. There was quite a quantity of pus in the bladder and considerable difficulty was experienced in removing the foreign bodies ; the bladder walls felt gritty. Drainage was established. He died shortly after his removal to his room, not having revived from the anesthetic and shock.

What these bodies are I do not know ; they have very much the appearance of the head and a portion of the shaft of the femur, and to this belief I committed myself. However, in view of their appearance, the previous history of the case in its relation to the femur may be of interest.

Early in October, 1901, this boy was referred to me for the reduction of a supposed dislocation of the left femur. About three weeks previously he had fallen from a wagon, striking upon the buttock ; swelling, pain and loss of motion followed. Upon examination a large gluteal abscess was found, but no dislocation. At that time my official duties took me from the city a great part of the time, so the case was referred to Dr. James Kerr. He made a diagnosis of gluteal abscess with involvement of the hip-joint, and

sent the boy to hospital. Under ether anesthesia the abscess was evacuated, the head of the femur and a part of the shaft removed, and the cavity of the acetabulum curetted. During the convalescence inflammation about the appendix developed, but no operation was permitted. He was returned to his home, wearing a hip-brace, and a high-soled shoe, as there was shortening of about three inches. The hip never caused any further trouble.

I was present at the operation and saw what was done, although the hospital records only show abscess of the hip, incision and drainage.

If the specimen presented is the head of the femur and part of the shaft, the question arises, how did it get in the bladder. The matter is left for speculation. *

Dr. W. P. Carr was of the opinion that the specimen represented the head and neck of the femur; not only was the general shape of the stone that of the femoral head and neck, but there was a surface which gave the exact appearance of a part of the cartilaginous portion of the joint, and when first removed there could be distinctly seen what appeared to be the linea aspera. The chemical analysis of the specimen need not negative the idea that it was originally a part of the femur; the natural result of retention of a piece of bone in the urinary bladder would be the absorption of the animal portion of the bone and its replacement with lime salts.

Dr. Jackson had witnessed the operation and had been especially interested in examining the specimen at the time of its removal. Dr. Carr had first suggested that it was the remains of bone, and in the fresh state it certainly looked like the head and neck of the femur.

Dr. W. B. Carr performed a partial autopsy in this case, and it was interesting and significant to note that the bladder wall was found to be adherent, together with the omentum, to the pelvic wall just opposite the old hip disease. This point of adhesion might very well mark the track of a perforation of the hip joint abscess into the bladder.

Dr. Abbe said that another point needed to be considered. If the specimen was indeed a piece of bone and if it was the head of the femur, was anything found at autopsy suggesting a hole in the ilium or the formation of new bone at the site of the acetabulum?

Dr. H. A. Fowler said that there were two points in particular to which he wished to refer. From the history it was fair to assume that this patient had been carrying this foreign body in his bladder for a number of years. It was perfectly amazing to find how long some patients will carry such a calculus in the

* Chemical examination of a number of fragments o ithe foreign body failed to disclose any bone.

bladder before seeking relief through its removal. The suffering of such patients is not intolerable, and indeed may be relatively slight. There is usually a history of recurrent "cystitis." During the attack he is laid up in bed for a short time, but in the interval between attacks he is quite comfortable. While a stone in the bladder ordinarily produces such acute and distressing symptoms as to make its early removal imperative, one occasionally sees these exceptional cases. One case at least is recorded in which multiple calculi were found, post mortem, in the urethra, which had produced no symptoms during life calling attention to their presence.

Dr. Fowler had reported a case of vesical calculus in which the stone produced absolutely no symptoms and was discovered accidentally in the course of a routine examination. This calculus was about the size of an English walnut, a typical mulberry stone, and was removed by litholopaxy under cocain at the office.

The second point: in these cases of long standing calculous disease of the bladder, the kidneys are usually so seriously involved that any operative interference is extremely hazardous. There is usually no rise in temperature, as in Dr. Eliot's case. One would not expect to find fever, as there is very little or no absorption from the infected bladder. As a rule the temperature is subnormal. This is the danger signal, and indicates serious renal involvement. These patients are in no condition to stand the simplest operation. The prognosis is always grave.

I operated upon a young man, Dr. Watkins' patient, who had been in apparently good health except for recurring attacks of "cystitis" dating back a number of years. He had been carrying two stones in his bladder all this time which had not interfered with his coming to Washington to study for admission to Annapolis. Finally an operation for their removal was imperative, but the kidneys were then too much damaged to stand an operation and he died of renal insufficiency a week later.

In another case, five stones had been carried about in the bladder for years, the patient steadfastly refusing operation. Finally an operation was done as an act of mercy. The result was anticipated from the extreme decrease in renal function as indicated by the phthalein test. This patient died on the thirteenth day. These experiences are recalled to emphasize the point that operation in these cases is extremely hazardous. Dr. Fowler could not agree with Dr. Carr as to the etiology of the foreign body in this case. It looked like a phosphatic vesical calculus. On section it showed the typical concentric arrangement of a phosphatic stone.

Dr. Selby suggested that the nature of the specimen could be cleared up by making stereo-radiographic plates of the fragments; such plates would reveal the internal structure of the

masses and indicate whether there was any bone. He offered to make such a study of the specimen.*

Dr. Eliot had hesitated to read his paper after discovering the notes taken at the time of the operation on the patient during his childhood; but since the discussion, and as Dr. Carr remained of the opinion that the specimen was the head and shaft of the femur, Dr. Eliot was rather glad that the additional evidence obtained from his old notes had been introduced, although at the operation he agreed with Dr. Carr. Dr. Eliot had taken careful notes, as was his practice, and these notes stated very distinctly that the head and three inches of the shaft of the femur had been removed and the acetabulum curetted. It needed to be remarked also that at the autopsy no fault was found in the wall of the pelvis.

Dr. Carr appreciated Dr. Selby's offer and would avail himself of it. The concentric arrangement of the stone corresponded to what would have been the medullary canal of the femur; the rest of the specimen looked like bone. After the passage of the fragment through the acetabulum, the opening would naturally have become closed with dense cartilaginous tissue, not to be distinguished by the sense of touch at autopsy.

PROCEEDINGS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Wednesday, October 7, 1914.—Vice President Dr. R. T. Holden, presided; about 100 members present.

The minutes of the meeting of May 27 and of the special meeting of July 23 were approved.

The Treasurer presented his report for the months of June, July, August and September, which was accepted.

On motion of Dr. Mulcahy the dues of Dr. J. L. Suddarth were remitted in perpetuity.

Dr. G. Wythe Cook, chairman of the Executive Committee, submitted the following recommendation: That it is not advisable to take any action in the matter of the commutation of sentence of Dr. T. J. Kemp. The report and recommendation were adopted.

Dr. A. L. Hunt, for the Committee on Program, asked authority to arrange for a joint meeting with the Anthropological Society October 21; to invite Dr. Juettner, of Cincinnati, to address the Society November 11, and to invite certain other physicians from other cities who will be here during the winter. Authority was granted as requested, provided the names of those invited be submitted to the Society for approval.

* Dr. Selby states that his examination failed to discover any bone.

A letter from Dr. J. Albert Potter drawing attention to alleged abuses of medical charities and to evils growing out of the licensing of midwives was referred to the Executive Committee.

Dr. Oscar Wilkinson was designated as the representative of the Society on the Committee on Conservation of Vision of the A. M. A. Council of Health and Public Instruction ; the designation was made at the request of the Council's Secretary on behalf of the committee.

A letter from the Secretary of the A. M. A. Council on Health and Public Instruction requesting active participation of this Society in the work of the Council and the nomination of additional speakers from this District was referred to the Committee on Public Instruction.

Dr. A. B. Hooe, for the Committee on Entertainment of the Virginia State Medical Society, reported that the committee had nearly completed its arrangements for the entertainment of the Virginia Society and gave the details of the program of entertainment provided. The thanks of the Society were given the committee and its diligence thus far commended.

The regular meeting of the Society for Wednesday, October 28, was suspended on account of the meeting of the Virginia Society.

The Chair announced the death of Dr. Wm. F. Byrns.

Dr. A. F. A. King suggested the propriety of expressing the sympathy of the Society to Dr. Wellington and its regret for his continued illness, and proposed the following resolution, which was adopted :

Resolved, That the Corresponding Secretary of the Medical Society be, and he is hereby, instructed to send to Dr. J. R. Wellington the following note :

"Dr. J. R. Wellington,

"President of the Medical Society of the District of Columbia.

"Dear Dr. Wellington :

"It is with great regret that the Medical Society of the District of Columbia learns of your continued illness, and we hereby desire to express to you our warm fraternal sympathy and an earnest hope for your early recovery, with all good wishes and kindest regards."

Dr. D. S. Lamb showed some specimens of *injury to bone*, from the Army Medical Museum.

One was a skull from a man age 42, who in some battle in Europe about 1855 received half a dozen cuts on the head with a saber, causing as many fissures, varying in depth, and all of which healed up. Afterwards he had epileptic seizures, in one of which he died in 1865. The autopsy showed some softening and a serous cyst of the right frontal lobe of the brain, and old adhesions of dura to bone.

A wide fissure of right parietal bone, extending into the left; from the battlefield of Waterloo, 1815. Obtained by Surgeon Wm. Gibson, who served with the allied armies in that battle. This is the Gibson who was one of the founders of the University of Maryland, who for some time was Professor of Surgery in that institution, and 1815 to 1819, Professor of Surgery in the University of Pennsylvania. He also was the first surgeon in this country to do the Cesarean operation.

A skull showing a slanting injury, slicing off a piece of left parietal bone, involving outer table and portion of diploe. No fissuring. A man of the Botan tribe of Formosa in the China Sea.

Another skull with a slicing injury, this time of the frontal bone and perforating; done with a *campilan*, one of the peculiar swords of the Philippines. The man was a slave and was killed in a dispute with his master. No fissuring.

In the civil war, 1861–65, from the two armies there were reported but 49 cases of saber and sword wounds of the head, and of these 8 were slanting injuries. Of the 49 cases 20 recovered.

Skull showing bayonet perforation of left parietal; the bayonet penetrated the skull cavity about one inch. The man lived 26 days and died of abscess of brain and diffuse meningitis. But five cases of bayonet injury of skull were reported for the two armies of the civil war; one recovered.

Rib of buffalo, showing iron arrow passing through from one edge to the other. The specimen illustrates the force with which an arrow could be driven.

Three hyoid bones from criminals who had been executed by hanging. The cornu of one is broken. Criminals so executed almost always die by suffocation, which causes immediate unconsciousness. The neck very rarely is broken, though generally supposed to be.

Drs. L. Eliot and W. P. Carr reported a case of foreign body in the urinary bladder, and presented the specimen. Discussed by Drs. Selby, Jackson, W. B. Carr, Abbe, H. A. Fowler, Eliot, and Carr. See page 361.

Dr. Selby read the paper for the evening. Title: "X-ray Diagnosis of the Accessory Sinuses."

Wednesday, October 14,—Vice President Holden, presided; about 110 members present.

The minutes of the meeting of October 7 were approved.

Dr. A. B. Hooe, for the Committee on Reception and Entertainment of the Virginia State Medical Society, reported further progress in the making of arrangements, and stated that while the committee had found it wisest to proceed with the work on the basis of securing a guarantee for the expenses of the entertainment by subscriptions from those members of the Society who

seemed to the committee most likely to be interested, it was the desire of the committee that as many members of the Society participate as possible, and tickets could be obtained from the Corresponding and Recording Secretaries, upon the payment of $10, which would admit the holders to all the meetings and entertainments during the sessions of the Virginia Society.

A letter from the National Committee for the Control of Cancer, seeking the coöperation of this Society, was referred to the Executive Committee.

The resignation of Maj. Elbert E. Persons from associate membership was accepted.

Dr. Barton presented a patient who had been treated for pellagra with the Goldberger diet ; he read notes upon the case, the clinical history of which was presented by Dr. Shirk, of the Washington Asylum Hospital. Discussed by Drs. Roy, Williams, Burbank, O'Malley, Pfender, L. O. Howard and Rogers. See page 353.

Dr. Selby completed his paper on X-ray diagnosis of the accessory sinuses by presenting stereoscopic plates to illustrate the methods and results. Discussed by Dr. C. W. Richardson.

Dr. M. d'Arcy Magee presented a specimen of multilocular ovarian cyst.

The specimen was removed from a girl, aged 15 years and 2 months ; its weight in all was 9½ pounds after removal ; on account of its unusual size some of its contents had to be aspirated to allow its delivery. The patient was first seen by her attending physician in March, 1914, for enlargement of abdomen, and menstruation began the same month. She presented no symptoms except a uniform distension of the abdomen and its embarrassment. With the growth of the mass there had been some irregularity of menstruation, recurring only for the second time during the past month. I saw her first in consultation in August, 1914, and could outline a distinct mass well above the umbilicus a little to right of median line. Vaginal examination revealed a small uterus, with a large fluctuating mass in the right broad ligament. The tumor was comparatively easily removed, there being no adhesions. It was attached in the region of the right ovary, ovarian tissue being part of tumor mass, and many cystic compartments contained a colloid like material. The left ovary and uterus were normal. The patient was a well preserved country girl and made an uneventful recovery.

Dr. A. B. Hooe said that it was a very interesting case and the specimen not less so. Such cases had been reported in even younger girls but were very rare. As such tumors are sometimes malignant, it might have been better if the incision had been made larger rather than to resort to the expedient of puncturing the cyst. Nowadays tumors are usually removed before they attain such enormous dimensions.

Dr. T. A. Claytor read the paper for the evening. Title: "Multiple Neuritis as a Complication of Typhoid Fever." Discussed by Drs. Williams, J. D. Morgan, J. D. Thomas, Barton and Claytor.

Joint meeting with the Anthropological Society of Washington, **Wednesday, October 21.**—Vice President Holden presided jointly with Mr. James Mooney, President of the Anthropological Society.

The meeting was held in the lecture room of the Washington Public Library and was attended by many members of both societies.

Dr. D. S. Lamb read the paper for the evening, its title being "Sanitation in Ancient Civilizations." Discussed by Drs. George M. Kober and J. Walter Fewkes. See page 335.

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Editorial.

History of the Medical Society of the District of Columbia.—Price $1.00, with 25 cents added if delivered in this city or sent by mail. Address Dr. C. W. Franzoni, 605 I Street, N. W. The books are in the custody of Dr. D. S. Lamb, at the Army Medical Museum.

The Washington Medical Annals, the official organ of the Medical Society of the District of Columbia, issued the first of January, March, May, July, September and November, will publish gratuitously such information of a medical, surgical and sanitary character, changes in personnel, &c., of hospitals, dispensaries, medical schools, medical societies and other medical agencies, as would be useful and interesting to the members of the Society. Address the Chairman of the Committee on Publication, Dr. D. S. Lamb, 2114 Eighteenth St., N. W.

THE OTHER MEDICAL SOCIETIES OF THE DISTRICT OF COLUMBIA.

ALUMNI MEDICAL SOCIETY OF GEORGETOWN UNIVERSITY. Active membership of 110; meets on the third Saturday of the month at the Medical School. Officers: W. M. Barton, President; Chas. I. Griffith, Recording Secretary; J. M. Moser, Corresponding Secretary; Ralph O'Connor, Treasurer.

CLINICAL SOCIETY.—Officers: D. W. Prentiss, President; F. L. Biscoe, Vice President; W. J. Mallory, Secretary-Treasurer; Censors: L. A. Johnson and J. D. Thomas.

Meeting place.	*Essayist and Date of meeting.*	*Discussion by.*
Dr. Barton.....	.....Dr. Mallory.....	.....Dr. W. E. Clark.
1730 Conn. Av., N. W.	November 9	
Dr. Reichelderfer.....	.....Dr. J. D. Thomas.....	....Dr. Hurtt.
1721 Conn. Av., N. W.	December 14	

CLINICO-PATHOLOGICAL SOCIETY.—Active membership limited to 25. Inactive membership: those who have withdrawn from active membership after 15 years. A limited honorary membership of eminent medical men. Meets on the first and third Tuesdays of the month from October to May, inclusive. Officers: President, J. D. Thomas; Vice Presidents, Loren Johnson and H. P. Parker; Secretary and Treasurer, B. M. Randolph.

FREEDMEN'S HOSPITAL MEDICAL SOCIETY.—Meets on the second Wednesday of each month from October to May, inclusive. Composed of physicians connected with the Staff of the Hospital and the Medical Faculty of Howard Medical School. E. A. Balloch, President; S. L. Carson, Vice President; C. A. Allen, Secretary-Treasurer; Committee on Program, E. A. Balloch, S. L. Carson and H. H. Hazen.

GALEN SOCIETY of the District of Columbia.—Business meeting and President's address, Oct. 19, at Dr. Kearney's, 1229 O Street. David W. Tastet, President; Carl Henning, Secretary.

GEORGETOWN CLINICAL SOCIETY; twenty active members limited to graduates of the Medical Department of Georgetown University. Meets at the University Club on the second Tuesday of the month. J. Russell Verbrycke, Jr., President; John Foote, Vice President; Ralph M. LeComte, Secretary-Treasurer.

HIPPOCRATES SOCIETY, membership limited to 25, with voluntary retired members after 10 years, meets on the second Thursday of the month. Officers for the year: L. M. Hynson, President; Wm. Earl Clark, Vice President; J. Russell Verbrycke, Jr., Secretary-Treasurer.

MEDICAL HISTORY CLUB of Washington, D. C.—Officers: President, Philip Roy; Vice-President, F. H. Garrison; Secretary, John Foote; Executive Committee, I. S. Stone, H.

W. Lawson, Wm. A. White and the Officers. Members: Truman Abbe, Frank Baker, W. C. Borden, Joseph H. Bryan, G. Wythe Cook, John Foote, F. H. Garrison, Howard Hume, H. W. Lawson, W. J. Mallory, G. Brown Miller, J. D. Morgan, John B. Nichols, P. S. Roy, I. S. Stone, John D. Thomas, Wm. A. White, W. W. Wilkinson, Mathew Kollig.

Medical and Surgical Society of the District of Columbia.—President, John Dunlop; Vice President, H. H. Hazen; Secretary and Treasurer, L. Eliot; Asst. Secretary, L. C. Ecker; Executive Council, O. A. M. McKimmie, E. L. Morgan, L. Eliot, L. H. Reichelderfer and Ecker.

Society of Medical Jurisprudence, Washington, D. C.—President, Dr. Wm. A. White; Vice President, R. Ross Perry; Secretary-Treasurer, Dr. D. P. Hickling. Meets on the second Monday of each month from October to June at University Club. Has from forty to fifty members.

Society of Ophthalmologists and Otologists, Washington, D. C., meets the third Friday of each month from October until May, inclusive.

Officers: President, L. S. Greene; Vice President, A. B. Bennett, Jr.; Secy.-Treasurer, A. H. Kimball, The Farragut.

Active members: Drs. A. B. Bennett, Jr., J. W. Burke, V. Dabney, W. T. Davis, L. S. Greene, C. Henning, E. B. Jones, A. H. Kimball, R. S. Lamb, F. B. Loring, O. A. M. McKimmie, W. B. Mason, M. E. Miller, Mead Moore, S. B. Muncaster, W. S. Newell, J. J. Richardson, E. G. Seibert, R. R. Walker, W. A. Wells.

Inactive members: Drs. J. H. Bryan, W. K. Butler, H. S. Dye, Wm. H. Fox, W. P. Malone, H. A. Polkinhorn, C. W. Richardson, D. K. Shute, W. H. Wilmer.

Society of Social Hygiene, Washington, D. C.—President, Surgeon General Stokes, U. S. Navy; Secretary, Lt. Col. J. R. Kean, U. S. Army, Surgeon General's Office. The Society has four committees, namely: Education, Venereal Diseases, Protection of Women and Children, and Psychopathology. Yearly dues, $1.00. Persons desiring to become members should address Col. Kean and state to which committee they wish to be assigned.

Therapeutic Society of the District of Columbia.—Meets at the G. W. School of Pharmacy, 808 I Street, N. W., on the first Saturday in each month. G. W. Latimer, President; A. P. Tibbets, Secretary.

Walter Reed Medical Society meets on the fourth Thursday of every other month, from September to May inclusive. Composed of physicians located in the eastern part

of Washington. Officers: R. A. Fisher, President; E. W. Burch, Vice President; R. F. Dunmire, Secretary; J. S. Arnold, Treasurer.

WASHINGTON SOCIETY OF NERVOUS AND MENTAL DISEASES. —President, Tom. A. Williams; Vice President, W. M. Barton; Secretary, J. J. Madigan. The Society has a limited membership of thirty, but welcomes Physicans and Surgeons interested in Neurology and Psychiatry. Meets monthly on the third Thursday at the Cosmos Club or a member's residence.

WOMEN'S MEDICAL SOCIETY of the District of Columbia. President, Sophie Nordhoff-Jung; Vice President, Ada R. Thomas; Secretary and Treasurer, A. Francis Foye; Corresponding Secretary, Margaret R. Stewart.

IN JULY, LAST, a meeting was held at the Government Hospital for the Insane, to discuss plans for a Society for the Study of Psychoanalysis. Dr. White was elected Chairman *pro tem*, and Dr. O'Malley, Secretary. Drs. Glueck, Hassall and Lind were appointed Program Committee. The first regular meeting to be held October 10, 1914, at eight o'clock P. M., at the Hospital. Dr. White to read a paper on a psychoanalytical subject, and a permanent organization then to be effected. All interested in the subject invited to be present.

THE SECRETARIES of the other Medical Societies of this District are reminded that the ANNALS will publish the schedules of their meetings.

THE WASHINGTON MEDICAL ANNALS.—Back numbers.—Members of the Society who have back numbers of the ANNALS, and do not intend to preserve them, are requested to send them to the Chairman of the Publication Committee. Requests for such numbers are frequently received. Address Dr. D. S. Lamb, Army Medical Museum.

THE TRAVEL STUDY TOUR of the Travel Study Club of American Physicians to the A. M. A. meeting, San Francisco Exposition, Honolulu, Japan, the Philippines, China, and around the world, 1915. Those interested address the business manager of the McCann's Tours, 1328 Broadway and 34th Street, N. Y. City.

DR. WM. F. BYRNS of this Society died September 18 at Ware, Mass. Was buried September 22 from St. Thomas Church, Woodley Lane, this city. See History of the Medical Society, page 315, for biographical sketch, and halftone number 34 for portrait.

DR. THEODORE N. GILL, an eminent zoölogist of this city, not a member of this Society, but well known to many of the members, died in this city September 25, in his 78th year. Buried at Oak Hill Cemetery September 28.

FIFTH INTERNATIONAL CONGRESS OF PHYSIOTHERAPY to be opened at St. Petersburg September 15, 1916. Secretary General, Prof. Federoff, St. Petersburg.

DR. L. D. BUCKLEY, of New York City, will deliver a series of lectures on the Medical Aspects of Cancer at the New York Skin and Cancer Hospital, Second Avenue and 19th St., New York City, on Wednesdays, at 4:15 P. M., beginning November 4. The lectures are free to physicians on presentation of their professional cards.

ALIENISTS AND NEUROLOGISTS OF THE UNITED STATES.—Third Annual Meeting held under the auspices of the Chicago Medical Society, July 13–17, 1914. The following resolutions were adopted :

"We recommend to the proper State authorities the absolute control of the sale of alcohol until such time as actual prohibition be enacted. That the sale of all habit-inducing drugs be strictly regulated in all States of the Union. That municipal or State control of venereal diseases be established, with proper treatment for indigent patients, to the end that the spread of syphilis and gonorrhoea may be prevented. That proper special hospitals for the care and treatment of alcoholism and drug addictions be established. That municipal, State and national inspection of labor conditions be regularly maintained and child labor abolished. That no known defective, dangerous to himself and to others, should be permitted to have unrestricted liberty. That adequate teaching of the principles of heredity and sex life be initiated and fostered in the home with the view to its introduction into the curricula of schools above the grammar grades ; this instruction to be given to the sexes separately. That the various States pass reasonable and universal marriage laws that will be reciprocal in preventing the marriage of the physical and mental unfit. That a psychopathic laboratory be connected with the criminal courts and common schools. Railroads, transportation companies and public service utilities, responsible for the actual safety of the general public should have their employees regularly examined as to their physical and mental fitness. That, inasmuch as State, county and city public health institutions should have as their superintendents men of the highest qualifications, who may devote their best efforts to their tasks, we recommend that all such positions be subject to civil service examinations. That in addition to the above, we recommend a nation-wide campaign of education conducted through the public press, university and medical schools, boards of health, State, county and city boards of education, women's clubs and other proper educational mediums, upon the true significance of the development—physical, mental and moral—of the individuals and the race ; and, finally, we recommend that a committee be appointed to promote the enactment of the above resolutions.

"We unqualifiedly condemn the use of alcoholic beverages and recommend that the various State legislatures take steps to eliminate such use. We recommend the general establishment by all States and Territories of special colonies or hospitals for the care of inebriates. Organized medicine should initiate and carry on a systematic, persistent propaganda for the education of the public regarding the deleterious effects of alcohol; and the medical profession should take the lead in securing adequate legislation to the ends herein specified.

"Health departments (municipal and State) should be equipped to make laboratory examinations for venereal diseases. All hospitals for the insane should be equipped to make laboratory examinations for venereal diseases. Hospitals and dispensaries for the treatment of venereal diseases should be provided. Physicians should be compelled by law to report cases of venereal diseases, as is now done in other contagious diseases. Applications for marriage should be required to furnish health certificates. Lectures and bulletins should be offered freely to the public regarding venereal diseases. Newspapers should be requested to use their best influence to educate the people concerning venereal diseases. Sex hygiene should be taught in the public schools, above grammar grades, to the sexes separately."

Food and Drug Control.—The chamber of Commerce of the United States, composed of representatives of about 600 local boards of trade, chambers of commerce and trade associations, has taken up the study of uniform food and drug regulation. A special committee has been appointed, composed of W. M. McCormick, of McCormick and Co., manufacturers, Baltimore, Md.; A. J. Porter, President Shredded Wheat Co., Niagara Falls; J. A. Green, Cleveland, Ohio, Secretary of National Association Retail Grocers; B. L. Murray, Chemist to Merck and Co., N. Y. City, and T. F. Whitmarsh, of the Francis H. Liggitt Co., New York City. Subcommittees have been appointed to consider the problems in the case and report to the general committee.

The committee adopted the following: *Resolved*, That this committee hereby earnestly and heartily endorses the establishment of the bureau in the United States Department of Agriculture particularly concerned with Federal and State coöperation in the enforcement of the Food and Drug Control Laws, thereby promoting an equal and uniform enforcement of such laws, believing that this work is distinctly in the public interest.

Help for Belgian Professors and Other Refugees at Oxford.—A letter received from Lady Osler speaks of the arrival in Oxford of refugees from Louvain University, consisting of professors with their families and some alone, who had escaped from the burning town with only the clothes on their backs and barely

enough money in their pockets to cross the Channel to Folkestone, and students from other parts of Belgium. The women and children were overcome with the horrors of the situation and the professors were stricken by the loss of their libraries, laboratories and the treasures of their ancient university. One professor escaped from Louvain with his wife, two babies and a manuscript which was said to be the only remnant of the famous collection in the Louvain Library.

Hospitality is being most generously offered by members of Oxford University, but at the moment the financial demands are enormous, and with reduced incomes it is difficult to meet all calls.

Lady Osler hopes to raise money to relieve the immediate wants of these stricken people and will be grateful for any sums, feeling sure of the universal sympathy felt.

Subscriptions can be sent to MRS. THOMAS B. FUTCHER, 23 W. Franklin St., Baltimore, Md.

SURGEON GENERAL GORGAS, U. S. Army, made an address September 28 before the Single Tax Club, Cincinnati. Published in the *Lancet-Clinic*, October 3, page 381, with editorial comments. General Gorgas appears to be a single-taxer.

REVIEWS.

PRACTICAL HORMONE THERAPY: A Manual of Organotherapy for General Practitioners. By HENRY R. HARROWER, M. D., late Professor of Clinical Diagnosis, Loyola University, Chicago; Fellow of the Royal Society of Medicine; Member of the American Medical Editors Association, etc. With a foreword by PROFESSOR DR. ARTUR BIEDL, Vienna. Demi, 8vo., pp. xx, 488, with 5 figures. 1914. London. BAILLIERE, TINDALL & COX. New York: H. R. HARROWER, 880 W. 180th St., $4.50 net.

This work consists essentially of abstracts from all the literature pertaining to the subject and correlated under proper headings. The first chapter deals with the discovery of the known hormones and the fundamental principles of hormone action. Naturally a considerable amount of this is theoretical. The remainder of the book is devoted to a consideration of the action of specific hormones and what is known of their application in medicine. The book is of more interest from an academic than from a practical standpoint. It deals largely with theory, and though a large vista is opened up there is but little conclusive evidence. Our chief objection to the volume is the inclusion of a considerable amount of unconfirmed work and isolated clinical reports. The bibliography and index are very complete.—WM. GERRY MORGAN.

GUIDING PRINCIPLES IN SURGICAL PRACTICE. By FREDERICK-EMIL NEEF, B. S., M. L., M. D., Adjunct Professor of Gynecology, Fordham University School of Med., New York City. Sextodecimo; 180 pages. SURGERY PUBLISHING CO., New York. Price, cloth, $1.50.

This is a thoroughly sensible and practical little work, which may be read with profit, especially by those beginning their surgical career. It not only tells *what* to do, before, during and after operation, but gives, in a convincing way, the reasons *why* the various steps set forth are necessary to successful, or, in other words, aseptic operating. The book is well printed and admirably arranged for reference and, while particularly useful to the young surgeon, it might be read to advantage by many of longer experience in surgical work.—EDWARD A. BALLOCH.

DISEASES OF BONES AND JOINTS, by LEONARD W. ELY, M. D., Associate Professor of Surgery, Leland Stanford, Junior, Univ., San Francisco, Cal. Sextodecimo; 220 pages, 94 illustrations. SURGERY PUBLISHING CO., New York. Price, cloth, $2.00.

Owing to the influence of Murphy and others, diseases of the bones and joints are occupying a large share of the attention of general surgeons, just at present. This book represents the accumulated experience of one who has been a close observer and hard worker in this particular field for many years. While intended primarily for the general practitioner it may be read with benefit by all who come in contact with this class of cases. One notes with grateful appreciation the absence of padding and of page after page of "case histories" which serve no useful purpose. The author says what he has to say in clear and readable style. Insistence is placed, and rightly placed, upon a knowledge of the pathology of bones and joints as a prerequisite to any understanding of the diseases of these structures. The keynote of the work is found in the following quotation:

"Let not the 'practical' surgeon dismiss the study of bone and joint pathology as not worth while. It is the most practical side of our subject. In those regions where it is neglected, the proportion of one-armed and one-legged persons will be found very high. The attempt to advance medical knowledge by means of clinical experience is like that to accumulate a fortune by speculation—*successful once in a while.*"—EDWARD A. BALLOCH.

RECENT PUBLICATIONS BY PHYSICIANS OF THE DISTRICT OF COLUMBIA.

J. F. Anderson, P. H. S.; Reaction of guinea pig to virus of typhus fever; *Jour. Med. Research,* July, abstracted in *Jour. A. M. A.,* August 22, page 707.

W. M. Barton; Postdiphtheritic paralysis; *N. Y. Med. Jour.* October 3.

F. B. Bishop; Some practical points in the therapeutic application of static electricity; *International Clinics.*

J. W. Bovée; Some landmarks in the history of gynecology; *Va. Med. Semi-Mo.,* August 21, page 244.

W. P. Carr; Anoci-operating; Same journal, October 9, page 313.

N. A. Cobb; Rhabditin; *Jour. Parasit.,* September 1.

L. E. Cofer; National quarantine; *N. Y. Med. Jour.,* August 15.

R. H. Creel, P. H. S.; Bubonic plague, its eradication and prevention in urban communities; Reprint 209 from Public Health Reports, July 17.

H. S. Cumming, P. H. S., Safe ice; Reprint 213 from Public Health Reports, August 7.

V. Dabney; Diabetes mellitus following interval operations of bilateral mastoiditis and unilateral exenteration of ethmoid, sphenoid and maxillary sinuses; *Med. Record,* N. Y., September 19.

C. R. Dufour; Malignant intra-ocular tumors; WASH. MED. ANNALS, July, page 255; abstracted in *Eclectic Med. Jour.,* October, page 528.

John A. Ferrell; Public Health Work as a career; *Jour. A. M. A.,* August 22, page 653.

John Foote; Arabian and medieval surgery; *Pop. Sci. Mo.,* November.

W. D. Foster; Peculiar morphologic development of an egg of genus *tropidocerca* and its probable significance; *Jour. Parasit.,* September 1. Also, Eggs of *ascaris lumbricoides;* Same journal and date.

Edward Francis; Laboratory studies of tetanus; Hygienic Laboratory, Bull. 95, August.

W. A. Frankland; Effects of caffein and nicotin on the activity of the intestinal musculature; *N. Y. Med. Jour.,* August 15.

F. Fremont-Smith; Mitral stenosis in process of development; *Va. Med. Semi-Mo.,* October 23, page 347.

R. H. Goldthwaite; Methods of handling field hospital equipment; *Military Surgeon,* October.

H. W. Graybill; Action of arsenic dips in preventing tick infestation; *Jour. Parasit.,* September 1.

F. R. Hagner; Neoplasms of bladder; *N. Y. Med. Jour.,* October 24.

M. C. Hall; Experimental ingestion by man of cysticerci of carnivore tapeworms; *Jour. Parasit.,* September 1.

H. H. Hazen; Verrucose dermatitis; *South. Med. Jour.,* September, page 710; abstracted in *Jour. A. M. A.,* October 3, page 1234. Also, Skin diseases in the American Negro; *Jour. Cutan.*

Dis., October; abstracted in *Jour. A. M. A.*, November 7, page 1697.

W. H. Huntington; Tonsillectomy, its indications and choice of operation; *Med. Record*, N. Y., August 15.

B. R. Jacobs, J. A. LeClerc and M. L. Mason; Chemical and bacteriologic study of wrapped bread; *Amer. Jour. Pub. Hlth.*, September.

A. H. Jennings; Two years study of insects in relation to pellagra; *Jour. Parasit.*, abstracted in *Jour. A. M. A.*, October 17, page 1424.

R. S. Lamb; External canthotomy; *Ophthalmic Record*, September.

C. H. Lavinder and E. E. Francis; Etiology of dengue; attempt to produce the disease in *Rhesus* monkeys by inoculation of defibrinated blood; *Jour. Infect. Dis.*, September.

C. H. Lavinder, Edward Francis, R. M. Grimm and W. F. Lorenz; Attempts to transmit pellagra to monkeys; *Jour. A. M. A.*, September 26, page 1093.

R. M. LeComte; Rabies; *Jour. A. M. A.*, November 7, page 1658.

J. E. Lind; The color complex in the negro; *Psychoan. Review*, October. Also, The dream as a simple wish—fulfilment in the negro; Same journal, July. Also, Partial analysis of an ether anesthesia dream; *Alien. and Neurol.*, August.

T. L. McDonald; Contractured psoas parvus tendon; *Surg., Gynec. and Obstet.*, August; abstracted in *Jour. A. M. A.*, September 5, page 892.

A. J. McLaughlin; The necessity for restriction and control of sewage pollution of the Great Lakes system; *Jour. A. M. A.*, October 31, page 1555.

W. J. Mallory; Physiology of gastric motility; *Med. Record*, N. Y., August 22 and September 12; abstracted in *Jour. A. M. A.*, September 26, page 1137.

W. J. Manning; A shockless horse litter for transportation of wounded; *Jour. A. M. A.*, October 24, page 1476.

J. F. Mitchell; Local anesthesia as applied to the radical cure of various forms of hernia; *Amer. Jour. Surgery*, October Supp., page 19.

F. P. Morgan; Alleged tuberculosis cures on the market; *N. Y. Med. Jour.*, October 17.

W. G. Morgan; Duodenal alimentation; *Amer. Jour. Med. Sci.*, September.

H. H. Newman and M. B. Fischer; Relation of systolic and diastolic blood pressure in diagnosis of certain acute circulatory conditions; WASH. MED. ANNALS, September, page 310; abstracted in *Jour. A. M. A.*, October 3, page 1234.

J. C. Pryor; Presence of spore bearing bacteria in Washington market milk; Bull. Johns Hopkins Hosp., September.

J. C. Pryor with W. W. Ford of Baltimore; Bacteria found in milk heated to various temperatures; Same journal and date.

B. H. Ransom; Destruction of vitality of *cysticercus bovis* by freezing; *Jour. Parasit.*, September 1; abstracted in *Jour. A. M. A.*, October 7, page 1424.

C. W. Richardson; Laryngitis submucosa subglottica acuta; *Laryngoscope,* July; abstracted in *Vermont Med. Mo.,* September 15, page 241. Also, Congenital atresia of postnasal orifice; *Lancet,* London, August 15.

J. J. Richardson; Study of Vincent's angina; *Annals Otol., &c.,* June.

J. L. Riggles; Case of intrauterine amputation during fetal growth; *Va. Med. Semi-Mo.,* October 9, page 325.

L. A. Rogers, W. M. Clark and A. C. Evans; Characteristics of bacteria of colon type found in bovine feces; *Jour. Infect. Dis.*, July.

G. B. Roth; New standard for determination of strength of pituitary extracts; *Jour. Pharm. and Exp. Therap.,* July; abstracted in *Jour. A. M. A.,* September 12, page 970.

W. C. Rucker, P. H. S.; The administration of a yellow fever campaign; Supplement 15 to Public Health Reports, June 12.

Wm. Salant; The pharmacology of sodium tartrate; *Jour. A. M. A.,* September 20, page 1076.

W. Salant and C. S. Smith; Toxicity of sodium tartrate; *Amer. Jour. Phys.,* September; abstracted in *Jour. A. M. A.,* October 24, page 1503.

J. W. Schereschewsky, P. H. S.; Heat and infant mortality; *Archives of Pediatrics;* December, 1913; abstracted in *Mo. Cyclop. and Med. Bull.,* August, page 483.

C. A. Simpson; Relative value of radium and roentgen ray in treatment of skin diseases and cancer; *South. Med. Jour.,* October.

J. F. Siler, U. S. A., P. E. Garrison, U. S. N., and W. J. McNeal, New York; Further studies of the Thompson-McFadden Pellagra Commission; *Jour. A. M. A.,* September 26, page 1090.

E. B. Vedder, U. S. A.; Beriberi; *Amer. Jour. Trop. Dis.,* June.

J. R. Verbrycke, Jr.; Chronic perforation of peptic ulcer; *Surg. Gynec. and Obstet.,* September. Also, Oesophageal obstruction; *Va. Med. Semi-Mo.,* October 9, page 320.

Carl Voegtlin, P. H. S.; The treatment of pellagra; *Jour. A. M. A.,* September 26, page 1094.

J. A. Watkins; Alaskan Eskimo; *Amer. Jour. Pub. Hlth.,* August.

C. S. White; Post-operative leucocyte count with especial reference to appendicitis; WASH. MED. ANNALS, September, page

302; abstracted in *Jour. A. M. A.*, October 3, page 1234. Also, Diverticulum of the appendix; *Va. Med. Semi-Mo.*, October 23, page 34.

T. A. Williams; The treatment of neuroses; *Amer. Jour. Med. Sci.*, October, abstracted in *Va. Med. Semi-Mo.*, October 23, page 358. Also, Occupational neuroses; pathogenesis and examples of treatment; *Cleveland Med. Jour.*, July. Also, Cerebellar dysergia from malarial thrombosus; *South. Med. Jour.*, October. Also, Contrast in psycho-analysis, three cases; *Jour. Abnorm. Psychol.*, June–September. Also, A principle in the treatment of sleeplessness; *Va. Med. Semi-Mo.*, October 23, page 339. Also, Spurious and genuine treatment of psychoses, illustrated by cases; *Illinois Med. Jour.*, October, page 303. Also, Faith cures and how they act contrasted with the principles of scientific mental healing, with case reports; *West Va. Med. Jour.*, October, page 118.

The notifiable diseases, their prevalence by states during 1913: Reprint 208 from Public Health Reports, July 10.

PERSONAL NOTES.

Dr. Ethan F. Butler of this city has been appointed in charge of the Extra Hospital Unit No. 1, going to Servia.

Dr. H. B. Corbit, P. H. S., has been ordered to the Hygienic Laboratory for duty.

Dr. F. Fremont-Smith read a paper on "Complications of Heart Disease in Pregnancy" before the Hancock County Medical Society, Maine, July 22.

Dr. Israel Leopold Glushak was married August 5 to Miss Anne Gordon of Glasgow, Scotland.

Dr. L. O. Howard gave a stereopticon lecture on "Some insects that carry disease" before the Pennsylvania State Medical Society, September 22, at Pittsburgh. Pa.

Dr. Harry E. Jenkins, Passed Assistant Surgeon, U. S. Navy, was married October 7 to Miss Harriet Whiting Gatewood of this city.

Dr. H. L. E. Johnson was elected Treasurer of the Pan-American Physicians at the meeting in Cincinnati October 28.

Drs. F. A. and Sofie N. Jung are reported to have established an American Red Cross Hospital, at Munich, with sixty beds.

Dr. T. C. Lyster, Major, Medical Corps, U. S. A., has been appointed assistant to the Attending Surgeon, Washington.

Dr. A. D. McLean, Surgeon, U. S. Navy, has been detached from the Naval Dispensary to the *Solace*.

Dr. E. P. Magruder has been appointed Medical Director of the Extra Hospital Unit No. 2, and with him as Staff physicians are also Drs. C. P. King and M. P. Lane of this city.

Dr. J. F. Mitchell read a paper on "Local anesthesia" before the Hancock County Medical Society, Maine, August 19.

Dr. E. S. Moore of this city, according to the *Journal A. M. A.*, has been awarded a Fellowship in Obstetrics in the University of Minnesota.

Dr. M. H. Neill, Assistant Surgeon P. H. S., has been ordered to duty at the Hygienic Laboratory.

Dr. H. J. Nichols, Captain, Medical Corps, U. S. A., has been transferred from the Army Medical School to the Letterman Hospital, San Francisco.

Dr. R. E. Noble, Major, Medical Corps, U. S. A., has been ordered to duty in the Surgeon General's Office.

Dr. J. A. Omer, Assistant Surgeon, U. S. Navy, has been ordered to the Naval Dispensary.

Dr. E. E. Persons, Major, Medical Corps, U. S. A., has been transferred from this city to Vera Cruz for temporary duty.

Dr. R. C. Ransdell, U. S. Navy, has been ordered to duty in the Bureau of Medicine and Surgery, Navy Department.

Dr. M. A. Reasoner, Captain, Medical Corps, U. S. A., has been ordered to duty at the Army Medical School.

Drs. Philip Newton, E. H. Egbert, A. M. Zinkham, C. H. Sanders and G. A. C. Stein, have gone with the American National Red Cross Steamer to Europe.

Dr. G. A. Riker, U. S. Navy, has been transferred from this city to the *Texas*.

Drs. C. W. Ross, H. N. Stenhouse and R. H. Thomson, Assistant Surgeons, U. S. Navy, have been ordered to the Naval Medical School.

Dr. Jacob Stiff has been ordered to the Naval Dispensary.

Dr. Elijah White Titus was married September 22 to Miss Julia Dove Beardsley, of Charleston, West Va.

Dr. L. P. Williams, Captain, Medical Corps, U. S. A., has been ordered to the Army War College, this city.

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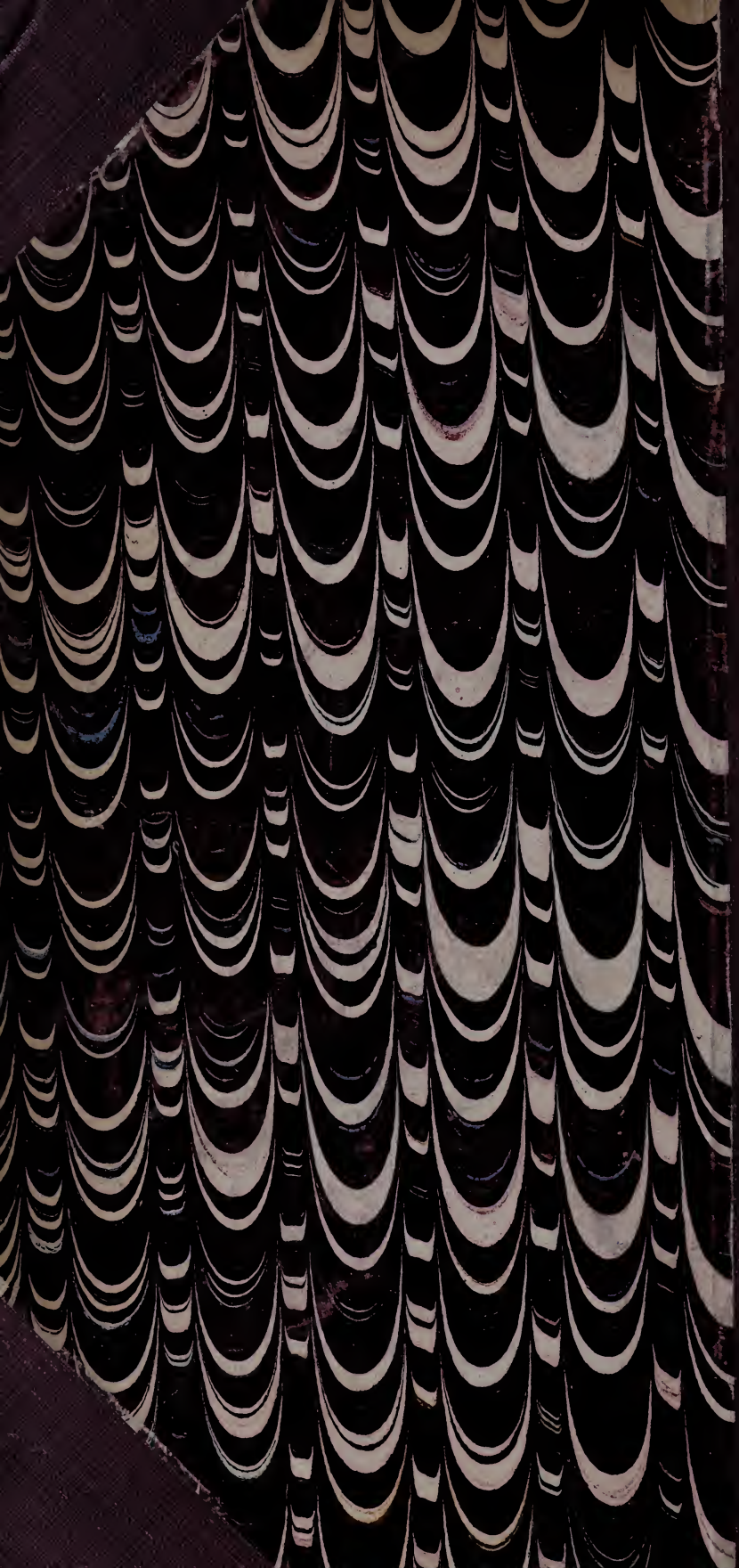
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